PROPOSED SR 1409 (MILITARY CUTOFF ROAD) EXTENSION AND PROPOSED US 17 HAMPSTEAD BYPASS
NEW HANOVER AND PENDER COUNTIES
STATE PROJECT 40191.1.2
NCDOT STIP PROJECTS U-4751 AND R-3300
CORPS ACTION ID 2007 1386

ADMINISTRATIVE ACTION

SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT

September 2013

US Army Corps of Engineers
Wilmington District

Co-Lead Agency: US Army Corps of Engineers-Wilmington District
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8 OCT 2013
Date

for Colonel, US Army
District Commander

9/27/13
Date

FOR Richard W. Hancock, P.E.
Manager
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation

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Documentation Prepared by

MULKEY ENGINEERS AND CONSULTANTS, INC.

with contributions from:

RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC.

9-26-13
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Project Commitments

Proposed Military Cutoff Road Extension and Proposed US 17 Hampstead Bypass

New Hanover and Pender Counties

State Project 40191.1.2

STIP Projects U-4751 and R-3300

Project Development and Environmental Analysis Unit-Project Development

Additional coordination with the US Fish and Wildlife Service regarding the project's potential effects on red-cockaded woodpecker and rough-leaved loosestrife will be conducted prior to completion of the final environmental document for this project.

Project Development and Environmental Analysis Unit-Human Environment Section

An archaeological survey of the project's area of potential effects was conducted between June 11 and July 5, 2013. Preliminary analysis suggests one of the sites identified, 31PD344**, will be recommended eligible for the National Register of Historic Places. The archaeological survey report will be submitted to the State Historic Preservation Office (HPO) for their review after it is completed. If the HPO concurs the recommended site is eligible for the National Register and the site cannot be avoided, then a MOA will be prepared between the USACE, the HPO, and NCDOT outlining the mitigation measures for the adverse effect to the site.

Roadway Design Unit, Hydraulics Unit, Roadside Environmental Unit and Division 3

- Howe Creek has been designated an outstanding resource water (ORW) by the North Carolina Division of Water Resources (NCDWR). Tributaries of this stream (BDITCH1) are designated ORW due to the classification of their receiving waters. Design Standards in Sensitive Watersheds will be implemented for BDITCH1 during project construction.
- Old Topsail Creek and Nixons Creek are designated as Commercial Shellfishing, High Quality Waters (SA; HQW) by NCDWR. Tributaries of these streams (NSA, NSF, NDITCH1 and ZTRIB1) are designated SA; HQW due to the classification of their receiving waters. Design Standards in Sensitive Watersheds will be implemented for these streams during project construction.

Project Development and Environmental Analysis Unit

If red-cockaded woodpecker foraging habitat ceases to exist at the northern interchange at the time NCDOT applies for authorization from the US Army Corps of Engineers to

construct the project, the Department will revisit the original interchange design, known as Alternative E-H ORIG. As currently described, Alternative E-H ORIG would further minimize wetland impacts compared to Alternative E-H with Option 6TR, which is NCDOT's preferred alternative.

Roadway Design Unit and Hydraulics Unit

3:1 slopes are proposed in wetland areas and adjacent to streams.

Division 3 Construction

- Areas within 750 feet of Cape Fear Public Utility Authority (CFPUA) wellheads will be treated as environmentally sensitive areas during construction. NCDOT will require the contractor to use orange fencing and post signs to identify these areas as environmentally sensitive. Staging areas and refueling will not be permitted within the environmentally sensitive areas.
- No right-of-way acquisition or construction will occur within a 100-foot radius around the Belvedere Subdivision well and access to the well site will be maintained. The well is located between existing US 17 and Belvedere Drive.

Roadway Design Unit and Division 3

- The Special Provisions for the Military Cutoff Road Extension (Project U-4751) will include a requirement for the contractor to educate their employees that project construction is occurring within a wellhead protection area.
- NCDOT will require the contractor for Military Cutoff Road Extension to provide a mobile response spill kit on site during construction. At the end of project construction the kit will be transferred to the Cape Fear Public Utility Authority. The CFPUA has agreed to provide a place to store the kit at their water treatment plant located adjacent to the proposed Military Cutoff Road Extension.

Roadway Design Unit and Transportation Program Management

- NCDOT will coordinate with local officials as the project progresses regarding the status of local greenway plans and proposed walking trails.
- The Wilmington Metropolitan Planning Organization (MPO) has requested the inclusion of a multi-use path along proposed Military Cutoff Road Extension. The multi-use path would tie into an existing multi-use path along Military Cutoff Road. The construction of a multi-use path as part of the proposed project will be dependent upon a cost-sharing and maintenance agreement between NCDOT and the Wilmington MPO. NCDOT will continue to coordinate with the Wilmington MPO on the inclusion of the multi-use path along Military Cutoff Road Extension.

Roadway Design Unit and Utilities Section

- NCDOT will coordinate with the Cape Fear Public Utility Authority regarding utility impacts resulting from the proposed project.
- NCDOT will coordinate with the Pender County School System regarding impacts to the Topsail Schools complex's wastewater treatment facility resulting from the proposed project.

Roadway Design Unit

- Well locations and a 100-foot buffer around the wells will be depicted on final constructions plans for proposed Military Cutoff Road Extension.
- NCDOT will further investigate ways to avoid impacts to the Corbett Tract and the Plantation Road Mitigation sites during detailed project design. If possible, no right-of-way will be acquired from these sites.
- The U-turn bulb-out just north of the Cape Fear Public Utility Authority property will not be placed in the adjacent wetland (Wetland CWA).

Hydraulics Unit

- The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement with FMP (dated April 22, 2013), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).
- NCDOT will review the existing permit requirements for all stormwater ponds impacted by Military Cutoff Road Extension to ensure the permitted treatment requirements are maintained under post-construction conditions.

Roadway Design Unit and Structure Design Unit

- Bicycle safe bridge railing will be provided on the NC 210 bridge over the Hampstead Bypass.
- A retaining wall will be provided on the west side of proposed Military Cutoff Road Extension south of Putnam Drive to avoid impacts to Wetland PD-01.
- The use of retaining walls will be evaluated at stormwater ponds BPE and BPF, which are located on the east side of Military Cutoff Road Extension between Lendire Road and Torchwood Boulevard.

Division 3

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Geotechnical Unit

Military Cutoff Road Extension may impact four properties that either have or formerly had underground storage tanks. US 17 Hampstead Bypass Alternative E-H may impact one property that either has or formerly had underground storage tanks. Preliminary site assessments to identify the nature and extent of any contamination will be performed at any potential hazardous materials sites prior to right-of-way acquisition.

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Appendices

List of Tables

List of Figures included in Appendix A

Summary

S.1 Type of Action

Administrative Action Environmental Impact Statement

(X) Supplemental Draft ( ) Final

S.2 Contact

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S.3 Proposed Action

S.3.1 Description of Proposed Action

State Transportation Improvement Program (STIP) projects U-4751 and R-3300 involve the construction of Military Cutoff Road Extension in New Hanover County and the US 17 Hampstead Bypass in New Hanover and Pender Counties, respectively. These projects are included in the 2012-2018 STIP.

For project U-4751, the North Carolina Department of Transportation (NCDOT) proposes to extend Military Cutoff Road as a six-lane divided roadway on new location from its current terminus at US 17 (Market Street) in Wilmington north to an interchange with the US 17 Wilmington Bypass (John Jay Burney Jr. Freeway). Limited and full control of access is proposed. For project R-3300, NCDOT proposes to construct the US 17 Hampstead Bypass as a freeway on new location. The US 17 Hampstead Bypass may connect to the proposed Military Cutoff Road Extension at the existing US 17 Wilmington Bypass and extend to existing US 17 north of Hampstead (see Figure S-1). Full control of access is proposed for the US 17 Hampstead Bypass.

S.3.2 Purpose of Proposed Action

The purpose of the project is to improve the traffic carrying capacity and safety of the US 17 and Market Street corridor in the study area.

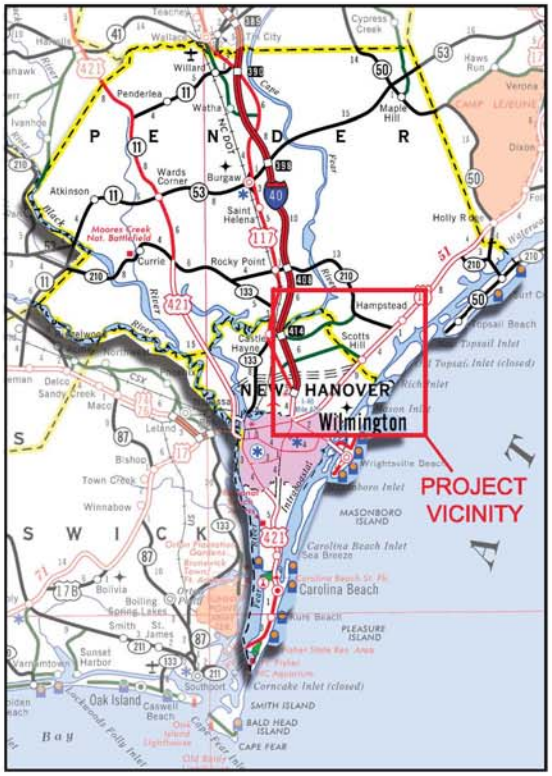
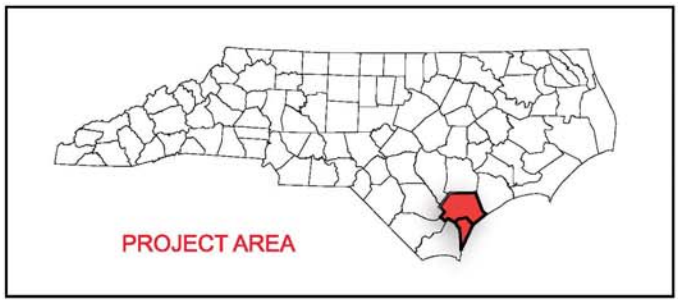


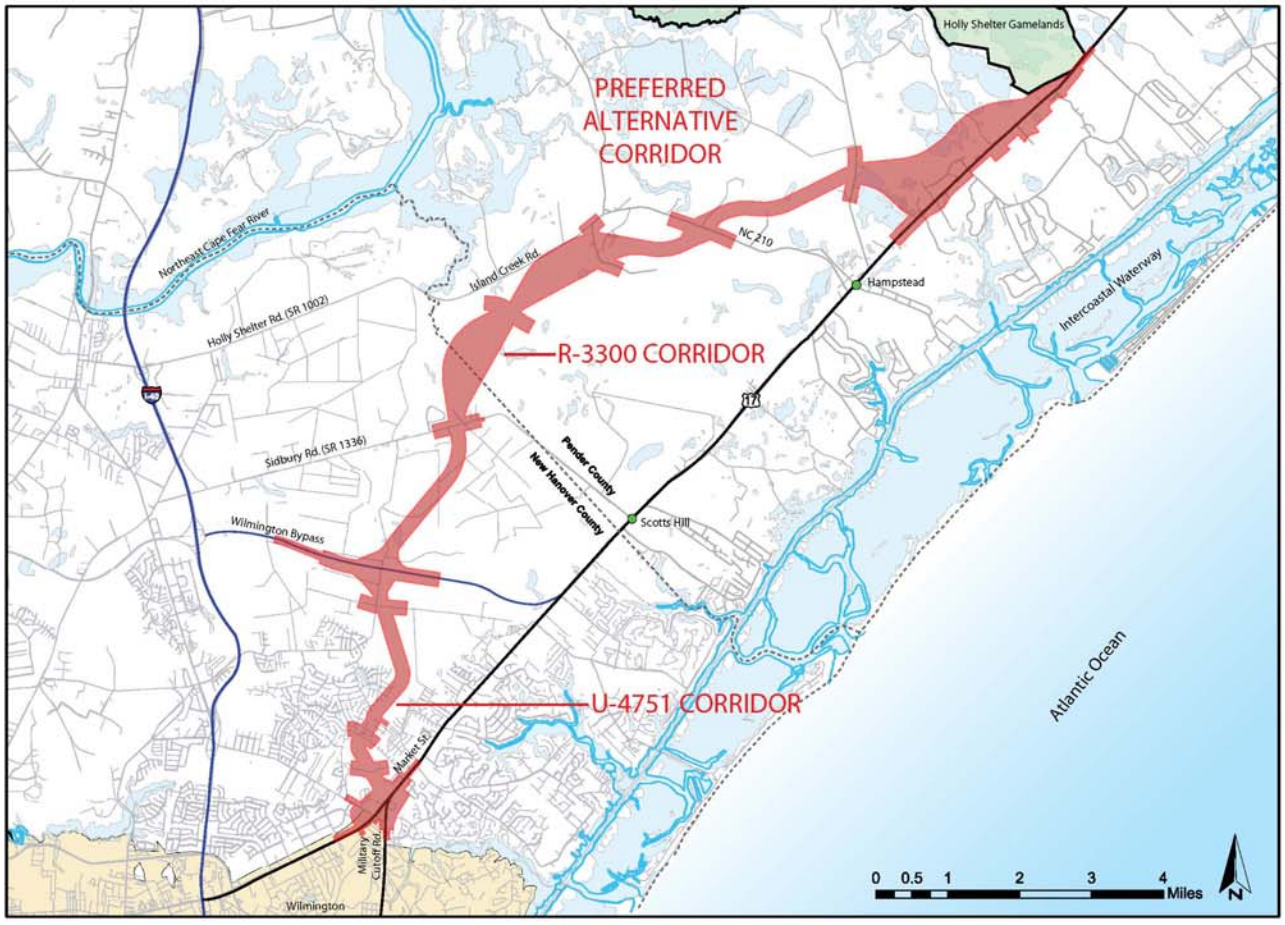
Figure S-1

PROJECT VICINITY

US 17 Corridor Study
NCDOT TIP Nos. U-4751 and R-3300
New Hanover and Pender Counties

North Carolina
Department of Transportation





S.4 Description of Project Change

The Draft Environmental Impact Statement (DEIS) for these projects was approved in July 2011.

At a National Environmental Policy Act (NEPA)/Section 404 Merger Team meeting held on May 17, 2012, NCDOT recommended Alternative M1+E-H as the Preferred Alternative for the proposed Military Cutoff Road Extension (U-4751) and US 17 Hampstead Bypass (R-3300) project (see Figure S-1). The Merger Team concurred on NCDOT's Preferred Alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) for the proposed project at this meeting. Although the Merger Team concurred on Alternative M1+E-H as the LEDPA, the final decision on the LEDPA will not be made until after the US Army Corps of Engineers (USACE) has applied the Section 404(b)(1) guidelines to a submitted permit application and completed the public interest review process for the proposed project (see Section 6.3). Based on this, Alternative M1+E-H will be referred to as NCDOT's Preferred Alternative (or "the Preferred Alternative") for the remainder of this document.

Since the approval of the DEIS and the selection of NCDOT's Preferred Alternative at the May 2012 Merger Team meeting, an additional interchange has been added to the northern end of the proposed US 17 Hampstead Bypass in response to public comments on the DEIS detailed study alternatives. An additional lane in each direction is also proposed along the bypass from the northern interchange as described in the DEIS to the northern project terminus. This portion of the project was described as a four-lane roadway in the July 2011 DEIS.

The purpose of this Supplemental DEIS for STIP projects U-4751 and R-3300 is to describe the changes to the project that have occurred since the release of the July 2011 DEIS. This Supplemental DEIS includes a discussion of the history and rationale for these changes, as well as an updated impact evaluation.

S.5 Summary of Impacts

Table S-1 summarizes the impacts of Alternative M1+E-H as presented in the July 2011 DEIS in comparison to the Preferred Alternative described in this Supplemental DEIS (Alternative M1+E-H, Option 6TR). The table also includes a summary of impacts for potential service road locations, along with the total impacts for the Preferred Alternative with the inclusion of the potential service roads. The impacts shown for the Preferred Alternative include all avoidance and minimization measures incorporated into the proposed project to date.

The Preferred Alternative and the locations of the potential service roads are shown on Figures 2A-2H in Appendix A.

Table S-1. Comparison of Alternative M1+E-H DEIS Impacts and M1+E-H (Option 6TR) Supplemental DEIS Impacts

Feature[1]	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)	Service Roads	M1+E-H Option 6TR & Service Roads Total
Length (miles)	17.50	17.82	5.19	23.01
Delineated Wetland Impacts (acres)	246.05	248.15	16.89	265.04
Delineated Stream Impacts (linear feet)	24,531	22,379	1,343	23,722
Delineated Pond Impacts (acres)	3.90	Pond impacts are broken out below based on their connection to tributary waters.		
Delineated Surface Water Impacts				
• Ponds with a connection to tributary waters (acres)	3.80	3.61	0.00	3.61
• Ponds with no connection to tributary waters (acres)		1.42	0.00	1.42
• Tributary waters determined to be jurisdictional based on the presence of an OHWM (square feet/acres)	Included in stream impacts in DEIS[2]	18,695/0.43	546.76/0.01	19,241.76/0.44
Displacements				
• Residential	61	53	0	53
• Business	84	39	0	39
• Non-profit	Included in businesses	4	0	4
Red-cockaded Woodpecker Cluster-Level Take	1	1	0	1
Other Federally-Protected Species Impacts	Yes	Yes	No	Yes
Natural Heritage Program SNHA, Managed Areas, and Wetland Mitigations Sites (acres)	4.43	4.41	0.00	4.41
Prime Farmlands/Farmlands of Statewide Importance (acres)	67.48	Farmland impacts will be updated in the FEIS and coordinated with the Natural Resources Conservation Service.		
Forest (acres)	512.12[3]	521.59	31.39	552.98
100 Year Floodplain and Floodway Impacts (acres)[4]	11.73	28.69	4.39	33.08

Feature[1]	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)	Service Roads	M1+E-H Option 6TR & Service Roads Total
Historic Properties (no.)	1	1	0	1
Noise Receptor Impacts	257	During final design, impacted noise receptors will be evaluated in the Design Noise Study and recommended noise barrier locations will be reviewed.		
Recorded Archaeological Sites (no.)	0	An archaeological investigation is underway. Results of the investigation will be included in the FEIS		
Wildlife Refuge/Gamelands (acres)	0	0	0	0
Recreational Areas/Parks (no.)	0	0	0	0
High Quality Waters Watershed (HQW, ORW, WS Protected or Critical Areas) (acres)	9.6	20.09	0.63	20.72
Public Water Supply Wells (100' Buffer)	2	0	0	0
Cemeteries (no.)	2	3	0	3
Potential UST/Hazmat Sites (no.)	5	5	0	5
Total Cost (in millions)[5]	$362.0	$355.8	$9.4	$365.2

[1]Impact calculations are based on preliminary design slope stake limits plus an additional 25 feet.
[2]Tributary waters determined to be jurisdictional based on the presence of an ordinary high water mark (OHWM). These waters are classified as 'Waters of the US' (impacts calculated in sq. ft.) and will not require compensatory mitigation.
[3]The DEIS included a typographical error and incorrectly reported forest impacts for M1+E-H at 518 acres.
[4]New GIS floodplain data was released after the July 2011 DEIS. Floodplain impacts for current preferred design and service roads were derived from most recent NC Floodplain data. Impacts presented in the DEIS were based on the old floodplain data.
[5]Updated costs will be included in the FEIS. Service road costs include construction costs only.

S.6 Unresolved Issues

Unresolved issues to be addressed prior to the publication of the Final Environmental Impact Statement include:

- Coordination with the State Historic Preservation Office regarding the results of archaeological surveys of NCDOT's Preferred Alternative corridor which were completed in July 2013.

- Additional coordination with the US Fish and Wildlife Service to determine the effects of the project on red-cockaded woodpecker (RCW) and rough-leaved loosestrife.

S.7 Actions Required by Other State and Federal Agencies

Construction of NCDOT's Preferred Alternative will require environmental regulatory permits from the USACE and the North Carolina Division of Water Resources (NCDWR).

- A Section 404 Permit from the USACE is required for any activity occurring in water or wetlands that would discharge dredged or fill material into Waters of the United States and adjacent wetlands. An individual Section 404 permit will be required. The USACE will determine final permit requirements.

- A Section 401 Water Quality Certification from the NCDWR is required for activities that may result in discharge to Waters of the United States to certify the discharge will be conducted in compliance with applicable state water quality standards. The Section 401 Water Quality Certification will be required prior to issuance of the Section 404 permit.

The proposed project will require a Coastal Area Management Act (CAMA) consistency determination from the North Carolina Division of Coastal Management.

Consultation with the US Fish and Wildlife Service (USFWS) regarding the effects of the proposed project on the federally-protected RCW and rough-leaved loosestrife is required.

The USACE will serve as the lead federal agency with respect to compliance with Section 7 of the Endangered Species Act. It is anticipated that the USACE will request of the USFWS that formal consultation for RCW and rough-leaved loosestrife be initiated in accordance with Section 7 of the Endangered Species Act.

Consultation with the State Historic Preservation Office regarding the eligibility of sites identified during archaeological surveys of NCDOT's Preferred Alternative corridor will be required.

The USACE will also serve as the lead federal agency with respect to compliance with Section 106 of the National Historic Preservation Act. Prior to the final environmental document for the project, the USACE will notify the Advisory Council on Historic Preservation of the project's adverse effect on the National Register-eligible Mount Ararat AME Church. A memorandum of agreement will be prepared between the USACE, the State Historic Preservation Office and NCDOT outlining mitigation measures for the adverse effect.

1.0 Purpose of This Document

North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP) projects U-4751 and R-3300 involve the construction of Military Cutoff Road Extension in New Hanover County and the US 17 Hampstead Bypass in New Hanover and Pender Counties, respectively. These projects are included in the 2012-2018 STIP. Consequently, studies are underway in accordance with the requirements set forth in the National Environmental Policy Act (NEPA) of 1969, as amended.

The purpose of this Supplemental Draft Environmental Impact Statement is to document changes to the proposed US 17 Hampstead Bypass project (Project R-3300) that have occurred since the release of the July 2011 Draft Environmental Impact Statement (DEIS).

NCDOT proposes to construct an additional interchange at the northern end of the US 17 Hampstead Bypass to address citizens' concerns regarding access along existing US 17. These concerns were presented by the public during the DEIS comment period and at the corridor public hearings held for the project. An additional lane in each direction is also proposed along the bypass from the northern interchange as described in the DEIS to the northern project terminus. This Supplemental DEIS includes a discussion of the history and rationale for the changes to the project, as well as an updated impact evaluation.

This Supplemental DEIS also presents information related to potential service road locations currently under study for Military Cutoff Road Extension and US 17 Hampstead Bypass.

New information and conditions relevant to environmental concerns, resulting in additional impacts not evaluated in the DEIS, are presented in this Supplemental DEIS. It is neither the intent nor the purpose of this Supplemental DEIS to revisit the NEPA/Section 404 Merger Team's concurrence on the DEIS detailed study alternatives (Concurrence Point 2), or their concurrence on Alternative M1+E-H as the Least Environmentally Damaging Practicable Alternative (LEDPA) (Concurrence Point 3). The Merger Team's LEDPA decision involves selection of a corridor, not a specific project design. The reasons for the Merger Team's concurrence on Alternative M1+E-H as the LEDPA, as well as the selection of Alternative M1+E-H as NCDOT's Preferred Alternative, remain valid. Section 4.5 of this document provides additional information regarding the validity of the Merger Team's LEDPA decision.

2.0 Purpose of and Need for Project

The following is a summary of information included in the July 2011 DEIS concerning the purpose and need for the proposed project. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the project's purpose and need. The project location and NCDOT's Preferred Alternative corridor are shown on Figure 1 and Figure 2A-2H in Appendix A.

2.1 Proposed Action

For project U-4751, the North Carolina Department of Transportation (NCDOT) proposes to extend Military Cutoff Road as a six-lane divided roadway on new location from its current terminus at US 17 (Market Street) in Wilmington north to an interchange with the US 17 Wilmington Bypass (John Jay Burney Jr. Freeway). Limited and full control of access is proposed.

For project R-3300, NCDOT proposes to construct the US 17 Hampstead Bypass as a freeway mostly on new location. The US 17 Hampstead Bypass will connect to the proposed Military Cutoff Road Extension at the existing US 17 Wilmington Bypass and extend to existing US 17 north of Hampstead. Full control of access is proposed for the US 17 Hampstead Bypass.

2.2 Purpose of Proposed Action

The purpose of the project is to improve the traffic carrying capacity and safety of the US 17 and Market Street corridor in the study area. The project is expected to provide the following benefits:

- **Improve traffic flow and level of service on US 17 and Market Street in the study area.**

The proposed projects will increase the capacity of the US 17 corridor and improve level of service, benefiting both local and through traffic. The proposed project will provide a new route for travelers with destinations in northern New Hanover County and area beaches. The project will remove much of the through traffic from the existing roadway, allowing it to better serve local land use.

- **Enhance safety along US 17 and Market Street in the study area.**

Separating through traffic from the local traffic that is using the existing roadway to access schools, shopping and residential areas will enhance safety.

2.3 Need for Proposed Action

The needs to be addressed by the proposed project are summarized below. Section 1.3 of the July 2011 DEIS includes technical data related to the existing and forecasted conditions in the study area in support of the need for improvements along the US 17 corridor in New Hanover and Pender Counties. This data includes analyses of the US 17 corridor in the study area with respect to base year (2008) and horizon year (2035) traffic operations, accidents and transportation demand.

- **Traffic Carrying Capacity**

Traffic volumes on US 17 in the project vicinity are expected to increase substantially over the next 25 years. Average daily traffic volumes along existing roads in the study area will more than double in some locations by 2035 from the 2008 base conditions. Roadway capacity analyses show that most of the arterials and intersections in the study area would either approach or exceed the roadway capacity limits during at least one peak hour of the day in 2035.

- **Safety Issues**

A total of 87 crashes occurred on Military Cutoff Road between Station Road and US 17 Business (Market Street) between January 1, 2007 and December 31, 2009. The total crash rate for Military Cutoff Road in this area is above the 2005-2007 statewide crash rate for urban Secondary Routes.

A total of 612 crashes including three fatal crashes occurred on Market Street between Station Road and the US 17 Wilmington Bypass interchange at Market Street between January 1, 2007 and December 31, 2009. The total crash rate for Market Street in this area is above the 2005-2007 statewide crash rate for urban United States routes.

A total of 489 crashes including two fatal crashes occurred on US 17 between the US 17 Wilmington Bypass interchange at Market Street and Sloop Point Loop Road between January 1, 2007 and December 31, 2009. The total crash rate for US 17 in this area is below the 2005-2007 statewide crash rate for rural United States routes.

An accident analysis utilizing more recent crash data is underway. The findings of the analysis will be included in the Final Environmental Impact Statement (FEIS).

- **Transportation Demand**

US Census Bureau statistics indicate New Hanover County grew by 33.3 percent from 1990 to 2000 and 22.3 percent between 2000 and 2010. Pender County grew by 42.4 percent between 1990 and 2000 and 32.9 percent between 2000 and 2010. Both counties are expected to continue to experience high growth rates through the year 2030. This growth in population, tourism and supporting services has resulted in an increase in mixed-purpose traffic on US 17.

3.0 Project Status

3.1 Project Schedule and Cost

Project U-4751 is programmed in the draft 2013-2023 NCDOT Program and Resource Plan for right-of-way acquisition in State Fiscal Year (SFY) 2014, and construction in SFY 2017. The current cost estimate for U-4751 is $113.1 million. Project R-3300 is programmed in the draft Program and Resource Plan for right-of-way acquisition in SFY 2017 and construction in SFY 2023. The current cost estimate for R-3300 is $242.7 million.

The total current cost estimate for the two projects is $355.8 million, which is less than the preliminary cost estimate presented in the DEIS for Alternative M1+E-H of $362.0 million. Table 1 shows the cost estimate included in the DEIS and current cost estimate for the project, with and without the potential service roads. The FEIS will include updated construction and right-of-way cost estimates reflecting final avoidance and minimization measures, as well as costs related to service roads selected for incorporation into the project.

Table 1. Cost Estimates

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)	Service Roads	M1+E-H Option 6TR & Service Roads Total
Total Cost (in millions)[1]	$362.0	$355.8	$9.4	$365.2

[1]Updated costs will be included in the FEIS. Service road costs include construction costs only.

3.2 Corridor Public Hearings

NCDOT conducted two corridor public hearings for the project following distribution of the July 2011 DEIS and the issuance of a Public Notice by the US Army Corps of Engineers (USACE):

- Monday, October 17, 2011 at Noble Middle School in Wilmington. 118 citizens registered their attendance at the meeting.
- Tuesday, October 18, 2011 at Topsail High School in Hampstead. 266 citizens registered their attendance at this meeting.

The purpose of the corridor public hearings was to obtain public input on the alternative corridors being considered for the project. The DEIS and hearing maps were available for review at the hearing, and prior to the hearing on the project website and locations within the community.

Fifteen individuals provided verbal comments and 92 written comments were received. Seventy of the written comments submitted pertained to the US 17 Hampstead Bypass. Most of those comments were related to the location of the northernmost interchange for the bypass, with most stating the lack of direct access to existing US 17 from the bypass at the northern end of the project was unacceptable.

Based on the public's concern related to the lack of direct access to existing US 17 from the Hampstead Bypass at the northern end of the project, the project team considered additional northern interchange options for the proposed bypass, as discussed in Section 4.0.

3.3 Selection of NCDOT's Preferred Alternative

Following distribution of the DEIS and the corridor public hearings, NCDOT recommended Alternative M1+E-H as the Preferred Alternative for the proposed Military Cutoff Road Extension (U-4751) and US 17 Hampstead Bypass (R-3300) project at a NEPA/Section 404 Merger Team meeting on May 17, 2012. At this same meeting, the NEPA/Section 404 Merger Team concurred on NCDOT's Preferred Alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA) for the proposed project. The LEDPA is the best solution to the problem satisfying the transportation need and considering environmental and community resources. Although the Merger Team concurred on Alternative M1+E-H as the LEDPA, the final decision on the LEDPA will not be made until after the USACE has applied the Section 404(b)(1) guidelines to a submitted permit application and completed the public interest review process for the proposed project (see Section 6.3). A copy of the Merger Team's signed LEDPA concurrence form is included in Appendix C.

In selecting its Preferred Alternative, NCDOT considered impacts calculated based on the proposed preliminary design available at that time. However, it is recognized the preliminary design will continue to be refined within the Preferred Alternative corridor through final design to address comments from environmental agencies and the public, and to avoid and minimize impacts. Alternative M1+E-H was selected as NCDOT's Preferred Alternative for the following reasons:

- Alternative M1+E-H is expected to have the fewest impacts to federally-protected species. Cooley's meadowrue stems were found in very close proximity to the right-of-way for Alternatives M2+O and M1+R. A number of rough-leaved loosestrife stems were found within the right-of-way for Military Cutoff Road Extension Alternative M2, which would affect Alternatives M2+O and M2+U.

- Alternative M2 impacts the Plantation Road Site, which was in part set aside as a preservation area for rough-leaved loosestrife as a result of a 2002 Biological Opinion.

- Alternative M1+E-H would have fewer impacts to preservation areas than Alternatives M2+O, M2+U, and M1+R.

- Alternatives M1+U and M2+U are not recommended because they have more residential and business relocations, greater noise impacts, greater impacts to cultural resources, more impacts to High Quality Waters watersheds, and greater total costs than Alternatives M1+E-H, M2+O and M1+R.

- Alternative M2+O is not recommended because it has more impacts to: federally-protected species, existing and proposed future Cape Fear Public Utility Authority (CFPUA) water supply infrastructure, wetlands, ponds, and preservation areas.

- Alternative M1+E-H has fewer wetland, pond and stream impacts than Alternative M1+R.

Table 2 presents a summary comparison of the impacts of the DEIS detailed study alternatives (see Figure 3 in Appendix A) as presented at the May 2012 LEDPA meeting.

Table 2. Comparison of Impacts of DEIS Detailed Study Alternatives
(as presented at May 2012 LEDPA Meeting)

Feature[1]	DEIS Detailed Study Alternatives[2]				
	M1+E-H (Preferred)	**M2+O**	**M1+R**	**M1+U**	**M2+U**
Length (miles)	17.5	16.6	17.1	18.0	16.8
Delineated Wetland Impacts (acres)	244.58	383.26	295.88	216.88	282.66
Delineated Stream Impacts (linear feet)	23,498	12,859	23,538	14,417	7,803
Delineated Pond Impacts (acres)	3.8	4.2	4.1	3.6	3.6
Displacements					
Residential	64	63	62	96	98
Business	76	76	76	91	91
Non-profit	5	5	5	11	11
Red-cockaded Woodpecker Future Potentially Suitable/Potentially Suitable Habitat (acres)	8.67/ 7.39	8.67/ 7.39	8.67/ 7.39	8.67/ 7.39	8.67/ 7.39
Other Surveyed Federal/State Threatened and Endangered Species Habitat Present	Yes	Yes	Yes	Yes	Yes
Natural Heritage Program SNHA, Managed Areas and Wetland Mitigations Sites (acres)	4.43	42.94	5.01	3.24	34.40
Prime Farmlands/Farmlands of Statewide Importance (acres)	68	58	58	50	50
Forest (acres)	512.97	507.23	466.97	406.97	456.23
100 Year Floodplain and Floodway Impacts (acres)	11.73	8.80	8.80	3.00	3.00
Historic Properties (no.)	1	1	1	3	3
Noise Receptor Impacts	257	236	248	310	304
Recorded Archaeological Sites (no.)	0	0	0	1	1
Wildlife Refuge/Gamelands (acres)	0	0	0	0	0
Recreational Areas/Parks (no.)	0	0	0	0	0
High Quality Waters Watersheds (HQW, ORW, WS Protected or Critical Areas) (acres)	9.19	9.19	9.19	11.99	11.99
Public Water Supply Wells (100' Buffer)	0	0	0	0	0
Cemeteries (no.)	2	2	2	5	5
Potential UST/Hazmat Sites (no.)	4	4	4	4	4
Total Cost (in millions)	$362.0	$359.3	$356.2	$404.8	$398.4

[1]Impact calculations are based on preliminary design slope stake limits plus an additional 25 feet.
[2]This table presents the impacts for the detailed study alternatives at the May 2012 LEDPA meeting.

3.4 Avoidance and Minimization of Impacts within the Preferred Alternative Corridor

Following the selection of NCDOT's Preferred Alternative, the proposed project was reviewed for additional measures that could be incorporated into the preliminary design to further avoid and minimize impacts to the human and natural environment.

The NEPA/Section 404 Merger Team met on June 14, 2012 to discuss potential additional avoidance and minimization efforts for the Military Cutoff Road Extension (U-4751).

Avoidance and minimization for Military Cutoff Road Extension was reviewed separately from the discussion for US 17 Hampstead Bypass (R-3300) in order to maintain the U-4751 project schedule. Additional time was needed prior to discussing avoidance and minimization measures for US 17 Hampstead Bypass so the northern interchange design and location could be further evaluated in response to comments received from the public at the corridor public hearings.

The NEPA/Section 404 Merger Team met on February 20, 2013 to discuss potential additional avoidance and minimization efforts for the proposed US 17 Hampstead Bypass.

Avoidance and minimization measures incorporated into the proposed project since the selection of NCDOT's Preferred Alternative are documented on the NEPA/Section 404 concurrence forms located in Appendix C. Additional avoidance and minimization measures to be evaluated for the proposed project are identified on the concurrence forms and documented in the project commitments.

4.0 Description of Project Change

4.1 Summary of Project Change

The original proposed northern US 17 Hampstead Bypass interchange (E-H ORIG) was located north of the Topsail Schools complex (Topsail High School, Middle School and Elementary School), near the project terminus between Leeward Lane and Sloop Point Loop Road. However, the results of a red-cockaded woodpecker (RCW) survey in 2008 and foraging habitat analyses in 2009 (updated in January 2011 and December 2012) showed the interchange was located within the foraging habitat for active RCW clusters. Several of the clusters are located within the boundary of Holly Shelter Game Land and are part of the Mid-Atlantic Coastal Plain Recovery Unit. In response, the project team revised the design and the northern US 17 Hampstead Bypass interchange was moved from its location north of the Topsail Schools complex to south of the schools to minimize impacts to RCW foraging habitat.

The relocated northern interchange, to the south of the schools (approximately 0.7 mile west of Grandview Drive), is the design used for the DEIS detailed study alternatives and shown on the public hearing map presented to citizens at the October 2011 corridor public hearings. The design did not provide access to the bypass for existing US 17 north of the schools. In their comments at the hearings, the public strongly specified maintaining access on existing US 17 was very important locally.

In response to the public's demand for continued access on existing US 17, a value engineering study was conducted in December 2011. Several interchange configurations maintaining access on existing US 17 and minimizing impacts to RCW foraging habitat were considered and narrowed down to two options considered to be conceptually viable. Traffic analyses and preliminary designs were prepared for several variations of the two options between December 2011 and December 2012.

The initial goal was to replace the currently proposed interchange south of the Topsail schools with an interchange north of the schools. Adjustments were made to the alignment of the bypass and a reduced design was used to develop an interchange that would fit between the school property and the RCW foraging habitat.

However, when detailed capacity analyses were performed on this design, it was discovered that traffic would back up onto the bypass from the traffic signal at Topsail High School. Adding a third lane onto existing US 17 at the school would alleviate this queuing, but the signal at the school would still not operate at an acceptable level of service.

Concerns regarding the operation of existing US 17 at the schools led the project team to consider keeping the currently proposed interchange south of the schools in addition to the newly designed interchange north of the schools. When traffic capacity analyses were performed on the dual interchange option, it was found that the signal on existing

US 17 at the Topsail Schools complex would operate acceptably and there would be no queuing onto the bypass.

The two northern interchange options considered in the final analysis are described below in Section 4.2.

4.2 Northern Interchange Options

The two northern interchange options considered are Options 6R and 6TR. Option 6TR (see Figure 4 in Appendix A) would construct an interchange north of the schools in addition to the current proposed northern interchange south of the schools. The roadway typical section is shown in Figure 5.

Option 6R (see Figure 6 in Appendix A) would construct an interchange north of the schools in place of the current proposed northern interchange south of the schools. Option 6R includes a service road to provide access to existing development on the east side of existing US 17 north of the school.

Both Option 6R and Option 6TR are located within the US 17 Hampstead Bypass Alternative E-H corridor. Both options would construct an interchange between the Topsail Schools complex and RCW foraging habitat. Both would avoid a Pender County water tower located adjacent to the schools. Both options would use a reduced design to fit between the constraints of the schools and RCW foraging habitat.

Due to their close proximity, a third lane is proposed in each direction between the two northernmost interchanges on US 17 Hampstead Bypass under Option 6TR. The additional lane serves as an auxiliary lane to allow for acceleration, deceleration and weaving. The third lane extends in each direction along the connection between the interchange west of Grandview Drive and existing US 17.

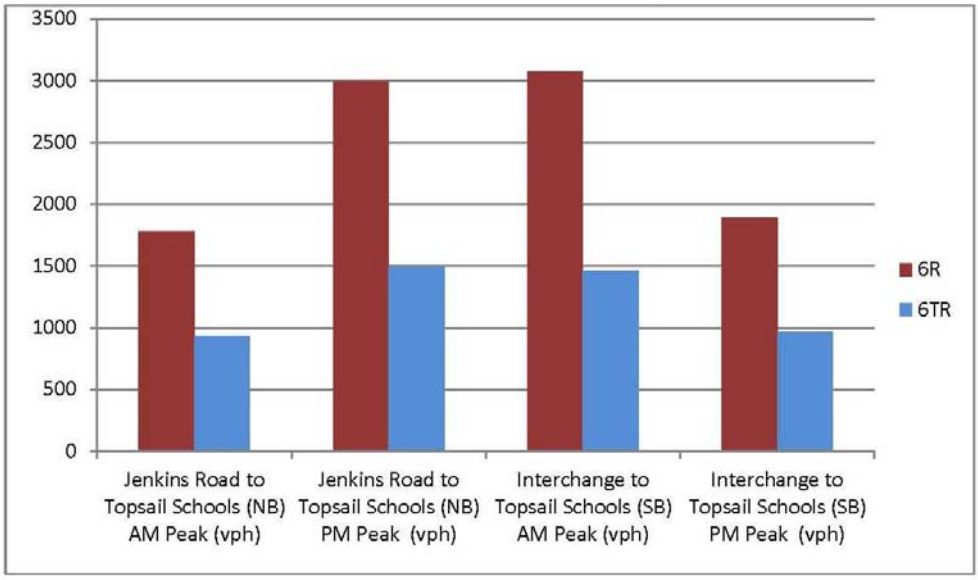
With one interchange (Option 6R), there would be 39,200 to 41,000 vehicles per day using existing US 17 in front of the Topsail Schools. With two interchanges (Option 6TR), the number of cars in front of the schools is reduced by over 50 percent, to 19,800 vehicles per day.

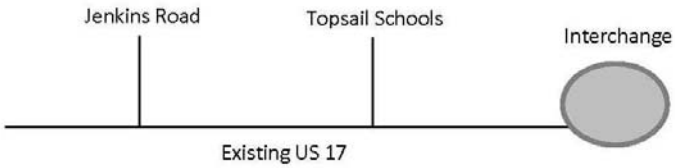
Option 6R requires a third lane on existing US 17 between the interchange and Country Club Drive to prevent cars from backing up onto the bypass.

With the addition of a lane in each direction on existing US 17 to reduce queuing issues, both options improve traffic conditions over the existing interchange configuration; however, overall traffic operations are better with Option 6TR. Figures 7 and 8 in Appendix A present the level of service and the peak hour traffic volumes for the northern part of the bypass and existing US 17 with the two options. With one interchange (Option 6R), there would be around 2,700 vehicles per hour headed southbound on existing US 17 in the morning at the schools. With two interchanges (Option 6TR), the number would drop by over a thousand vehicles per hour to

approximately 1,300. The signal at the school would operate at a better level of service, as well. The graphic below illustrates traffic operations in front of the Topsail Schools complex are better under Option 6TR.

Peak Hour Traffic Volumes Comparison in the Vicinity of Topsail Schools Complex





Figures 7 and 8 also show how much traffic would use the interchange north of the school. With the one interchange option, 2,195 vehicles per hour in the morning would use the flyover to access existing US 17 from southbound US 17. With two interchanges, the volume drops to 885 vehicles per hour. As noted above, due to the constraints with the school and the RCW foraging habitat, this northern interchange is smaller than a typical interchange. The design is more appropriate for a local access interchange carrying lower volumes than the higher volumes it would have to carry if it were the only interchange in the north.

4.3 Basis for Selection of Option 6TR

Option 6TR, with two interchanges, is the preferred option for the US 17 Hampstead Bypass Alternative E-H northern interchange configuration for the following reasons:

- Option 6TR distributes existing US 17 traffic between two interchanges, resulting in better level of service, while all traffic is concentrated at one interchange under Option 6R.

- The northern interchange is adjacent to three schools. Two interchanges will reduce the traffic and congestion in the vicinity of the Topsail Schools complex.

- Traffic studies for the northern interchange options showed a single interchange (Option 6R) would present queuing issues at the signal in front of the Topsail Schools complex. This queuing would result in traffic backing up onto the US 17 Hampstead Bypass. To address this issue, an additional lane was added to existing US 17 in each direction in the vicinity of the schools to help prevent cars from backing up onto the bypass at this location. However, the signal in front of the schools would continue to function at an unacceptable level of service with one interchange. The two interchange design with Option 6TR will eliminate the queuing issues at the signal in front of the schools that would result in traffic backing up onto the bypass without adding additional lanes to existing US 17. In addition, the signal in front of the schools will operate at an acceptable level of service with Option 6TR.

- An increase in traffic or a traffic incident on existing US 17 in front of the Topsail Schools complex, such as from an accident or special school events, would be more prone to cause backups onto the US 17 Hampstead Bypass under Option 6R.

- The second interchange provided under Option 6TR will result in better traffic circulation for the Hampstead area. With the single interchange option, there would be over five miles between interchanges.

- The northern interchange has a reduced design in order to minimize impacts to RCW foraging habitat and the schools, while restoring access to existing US 17. This reduced design is more appropriate for a local access interchange than for a major interchange.

- No service roads are required to provide access to existing development on the east side of existing US 17 north of the Topsail Schools complex with Option 6TR.

- More crashes could be expected at the intersection at the school with one interchange, due to the increased exposure and opportunity for conflicts. The six lanes required in front of the school with one interchange would make it more difficult to accommodate pedestrians and bicycles at the intersection and there would be more lane changing and weaving conflicts in the area. With two interchanges, there is better dispersion of traffic in the area.

Table 3 provides a further comparison of the two northern interchange options.

Table 3. Comparison of Northern Interchange Options 6R and 6TR

Option 6R		**Option 6TR**
3	No. of Lanes Needed in Front of School to Resolve Queuing Back-up onto Hampstead Bypass	2
Higher speeds from freeway free flow ramp	Southbound Approach to Topsail Schools Complex	Lower speeds from stop at T-intersection
41,200 / 39,200	AADT North/South of Topsail Schools Complex Intersection (vpd)	19,800 / 19,800
D – E – F	Level of Service at: Northern Interchange – Schools – Jenkins Rd.	C – C – D
Greater than 5 miles between interchanges	Local Access	Better local traffic circulation
Reduced design less appropriate for a major interchange	Design	Reduced design more appropriate for local access interchange
More likely	Likelihood a Traffic Event at Schools Would Result in Backup onto Bypass	Less likely

The Merger Team concurred, with one abstention, on avoidance and minimization measures for the proposed US 17 Hampstead Bypass that include Option 6TR on June 13, 2013.

If RCW foraging habitat ceases to exist at the northern interchange at the time NCDOT applies for authorization from the USACE to construct the project, the Department will revisit the original interchange design, known as Alternative E-H ORIG. As currently described, Alternative E-H ORIG would further minimize wetland impacts compared to Alternative E-H with Option 6TR, which is NCDOT's preferred.

4.4 Service Roads

The proposed Military Cutoff Road Extension and US 17 Hampstead Bypass will remove access for a number of properties that would otherwise be unaffected by the projects.

NCDOT completed a service road study for Military Cutoff Road Extension. Two service roads (SR1 and SR4) were determined to be cost effective and will be further evaluated in the FEIS. The locations of SR1 and SR4 are shown on Figures 2A-2D in Appendix A.

A service road study for US 17 Hampstead Bypass is underway. Twelve service road locations (SR5 through SR16) are being evaluated as part of the study. Because the study has not been completed, all of these potential service roads have been retained for evaluation in this Supplemental DEIS. Once the service road study for US 17 Hampstead Bypass is completed, the service roads identified as cost effective will be further evaluated from an environmental standpoint in the FEIS. The locations of SR5 through SR16 are shown on Figures 2A-2H in Appendix A.

Typically, proposed service road locations are discussed with the Merger Team at the same time as avoidance and minimization measures (Concurrence Point 4A). In the case of this project, potential service road locations could not be identified and the service road studies conducted in time to discuss this information with the Merger Team. Proposed service road locations will be discussed with the Merger Team after they are identified.

Table 4 shows the anticipated impacts and estimated construction costs associated with each of the potential service road locations. None of the potential service roads would impact protected species, historic properties, recorded archaeological sites, wildlife refuges or game lands, recreational areas, parks, Significant Natural Heritage Areas, cemeteries, potential underground storage tanks (UST), or hazardous material (Hazmat) sites.

Table 4. Summary of Impacts for Potential Service Roads

Feature[1]	Service Roads													
	SR1	SR4	SR5	SR6	SR7	SR8	SR9	SR10	SR11	SR12	SR13	SR14	SR15	SR16
Length (miles)	0.16	0.53	0.26	0.11	0.39	0.16	0.11	0.18	0.55	0.38	0.22	1.34	0.29	0.51
Delineated Wetland Impacts (acres)	0.00	2.71	0.19	0.14	0.50	0.00	0.00	0.00	0.55	0.32	0.26	7.88	2.44	1.90
Delineated Stream Impacts (linear feet)	0	1,170	72	0	0	0	0	0	101	0	0	0	0	0
Delineated Surface Water Impacts														
• Stormwater ponds with a connection to tributary waters (acres)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
• Stormwater ponds with no connection to tributary waters (acres)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
• Tributary waters determined to be jurisdictional based on the presence of an OHWM (square feet/acres)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	546.76/0.01
Displacements														
• Residential	0	0	0	0	0	0	0	0	0	0	0	0	0	0
• Business	0	0	0	0	0	0	0	0	0	0	0	0	0	0
• Non-profit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest (acres)	0.16	1.17	0.25	1.03	4.17	1.66	1.12	0.25	2.65	1.04	0.97	14.26	0.00	2.66
100 Year Floodplain and Floodway Impacts (acres)[2]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.39
Noise Receptor Impacts	The DEIS Traffic Noise Technical Memorandum was not updated for the service roads. Impacted noise receptors will be updated in a Design Noise Report and recommended noise barrier locations will be reviewed.													
High Quality Waters Watershed (HQW, ORW, WS Protected or Critical Areas) (acres)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
Construction Cost (in millions)[3]	$0.19	$0.82	$0.48	$0.23	$0.85	$0.28	$0.23	$0.33	$1.08	$0.70	$0.40	$2.45	$0.53	$0.90

[1]Impact calculations are based on preliminary design slope stake limits plus an additional 25 feet. Service road slope stakes plus 25 feet boundaries clipped to mainline proposed ROW file to avoid overlap when calculating impacts (where applicable).
[2]Floodplain impacts were derived from most recent NC Floodplain dataset.
[3]Updated costs will be included in the FEIS.

4.5 Validity of Merger Team LEDPA Decision

As stated in Section 1.0 of this document, the changes now proposed for Alternative M1+E-H do not invalidate the NEPA/Section 404 Merger Team's concurrence on that alternative as the LEDPA for the project, or the selection of Alternative M1+E-H as NCDOT's Preferred Alternative. However, as stated previously, although the Merger Team concurred on Alternative M1+E-H as the LEDPA, the final decision on the LEDPA will not be made until after the USACE has applied the Section 404(b)(1) guidelines to a submitted permit application and completed the public interest review process for the proposed project (see Section 6.3).

The addition of an interchange and an additional lane in each direction at the northern end of the US 17 Hampstead Bypass (Option 6TR) would result in similar changes in impacts to all of the alternatives studied in detail in the DEIS, as shown in Table 5 below. The table shows the increase or decrease in impacts to environmental features for the detailed study alternatives with Option 6TR incorporated into the design of each alternative. Features for which there is no change in the impacts are not included in the table. See Figure 3 in Appendix A of this document for the DEIS detailed study corridor alignments.

Table 5. Change (+/-) in Detailed Study Alternatives Impacts with R-3300 Northern Interchange Option 6TR

Feature[1]	DEIS Detailed Study Alternative				
	M1+E-H (Preferred)	**M2+O**	**M1+R**	**M1+U**	**M2+U**
Delineated Wetland Impacts (acres)	+17.89	+17.89	+17.89	+17.75	+17.75
Delineated Stream Impacts (linear feet)	+681	+681	+681	+959	+959
Delineated Pond Impacts (acres)	+0.73	+0.73	+0.73	+0.72	+0.72
Residential Displacements[2]	No change	No change	No change	No change	No change
Business Displacements[2]	-3	-3	-3	-3	-3
Forest (acres)	+8.62	+8.62	+8.62	+8.38	+8.38
100 Year Floodplain and Floodway Impacts (acres)	+1.2	+1.2	+1.2	+1.4	+1.4
High Quality Waters Watershed (HQW, ORW, WS Protected or Critical Areas) (acres)	+10.9	+10.9	+10.9	+10.9	+10.9
Cemeteries (no.)	+1	+1	+1	+1	+1
Potential UST/Hazmat Sites (no.)	+1	+1	+1	+1	+1

[1]Impact calculations are based on preliminary design slope stake limits plus an additional 25 feet.
[2] Displacements are calculated based on proposed right-of-way limits. These numbers reflect changes associated with northern interchange Option 6TR only. Changes in impacts as a result of avoidance and minimization measures elsewhere along the project are not included in the table.

Alternative M2+O was not selected by the Merger Team as the LEDPA because it would have more impacts to federally-protected species, proposed future CFPUA water supply infrastructure, wetlands, ponds, and preservation areas. Alternative M1+R was not selected because it would affect more preservation areas, wetlands, ponds, and streams. Alternatives M1+U and M2+U were not selected as the LEDPA because they would have more residential and business relocations, greater noise impacts, and greater impacts to cultural resources. As Table 5 shows, the addition of an interchange and the change from four lanes to six lanes in the northern section would not have affected these factors. Figure 5 shows the proposed typical sections for the US 17 Hampstead Bypass.

5.0 Environmental Effects of Project Change

This chapter identifies changes in the beneficial and adverse social, economic, and environmental consequences of NCDOT's Preferred Alternative, Alternative M1+E-H, since the July 2011 DEIS.

Both human and natural environmental resources within the study area, or alternative corridors, were identified in Chapter 3 of the DEIS. A preliminary design was established within each detailed study alternative corridor for the purpose of assessing environmental and socioeconomic impacts. Specific impacts of each detailed study alternative, including Alternative M1+E-H, were discussed in Chapter 4 of the DEIS.

The impacts presented in this chapter are based on the preliminary design plans for Alternative M1+E-H, NCDOT's Preferred Alternative, revised to include northern interchange Option 6TR and potential service road locations. Avoidance and minimization measures incorporated into the project to date are reflected in the impacts presented, as well.

5.1 Summary of Project Impacts

Table 6 summarizes the impacts of Alternative M1+E-H as presented in the July 2011 DEIS in comparison to the Preferred Alternative described in this Supplemental DEIS (Alternative M1+E-H, Option 6TR). A summary of impacts for potential service road locations is also presented.

Table 6. Comparison of Alternative M1+E-H DEIS Impacts and M1+E-H (Option 6TR) Supplemental DEIS Impacts

Feature[1]	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)	Service Roads	M1+E-H Option 6TR & Service Roads Total
Length (miles)	17.50	17.82	5.19	23.01
Delineated Wetland Impacts (acres)	246.05	248.15	16.89	265.04
Delineated Stream Impacts (linear feet)	24,531	22,379	1,343	23,722
Delineated Pond Impacts (acres)	3.90	Pond impacts are broken out below based on their connection to tributary waters.		
Delineated Surface Water Impacts				
• Ponds with a connection to tributary waters (acres)	3.80	3.61	0.00	3.61
• Ponds with no connection to tributary waters (acres)		1.42	0.00	1.42
• Tributary waters determined to be jurisdictional based on the presence of an OHWM (square feet/acres)	Included in stream impacts in DEIS[2]	18,695/0.43	546.76/0.01	19,241.76/0.44
Displacements				
• Residential	61	53	0	53
• Business	84	39	0	39
• Non-profit	Included in businesses	4	0	4
Red-cockaded Woodpecker Cluster-Level Take	1	1	0	1
Other Federally-Protected Species Impacts	Yes	Yes	No	Yes
Natural Heritage Program SNHA, Managed Areas and Wetland Mitigations Sites (acres)	4.43	4.41	0.00	4.41
Prime Farmlands/Farmlands of Statewide Importance (acres)	67.48	Farmland impacts will be updated in the FEIS and coordinated with the Natural Resources Conservation Service.		
Forest (acres)	512.12[3]	521.59	31.39	552.98
100 Year Floodplain and Floodway Impacts (acres)[4]	11.73	28.69	4.39	33.08

Feature[1]	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)	Service Roads	M1+E-H Option 6TR & Service Roads Total
Historic Properties (no.)	1	1	0	1
Noise Receptor Impacts	257	During final design, impacted noise receptors will be evaluated in the Design Noise Study and recommended noise barrier locations will be reviewed.		
Recorded Archaeological Sites (no.)	0	An archaeological investigation is underway. Results of the investigation will be included in the FEIS.		
Wildlife Refuge/Game Lands (acres)	0	0	0	0
Recreational Areas/Parks (no.)	0	0	0	0
High Quality Waters Watershed (HQW, ORW, WS Protected or Critical Areas) (acres)	9.6	20.09	0.63	20.72
Public Water Supply Wells (100' Buffer)	2	0	0	0
Cemeteries (no.)	2	3	0	3
Potential UST/Hazmat Sites (no.)	5	5	0	5
Total Cost (in millions)[5]	$362.0	$355.8	$9.4	$365.2

[1]Impact calculations are based on preliminary design slope stake limits plus an additional 25 feet.
[2]Tributary waters determined to be jurisdictional based on the presence of an ordinary high water mark (OHWM). These waters are classified as 'Waters of the US' (impacts calculated in sq. ft.) and will not require compensatory mitigation.
[3]The DEIS included a typographical error and incorrectly reported forest impacts for M1+E-H at 518 acres.
[4]New GIS floodplain data was released after the July 2011 DEIS. Floodplain impacts for current preferred design and service roads were derived from most recent NC Floodplain data. Impacts presented in the DEIS were based on the old floodplain data.
[5]Updated costs will be included in the FEIS. Service Road costs include construction costs only.

5.2 Human Environment Impacts

An Indirect and Cumulative Effects Screening Report or Assessment and Land Use Scenario Assessment are being prepared to update the June 2009 Community Impact Assessment and Qualitative Indirect and Cumulative Effects Assessment. Information from the updated reports will be summarized in the FEIS.

5.2.1 Community Impacts

The project design will realign existing US 17 just south of Grandview Drive and extend existing US 17 on new location to connect with the proposed US 17 Hampstead Bypass at a trumpet interchange (see Figure 4). Existing US 17 from just south of Grandview Drive to north of the Topsail Schools complex near Leeward Lane will be converted into a local road.

The project design for the detailed study alternatives presented in the DEIS did not provide a connection to the bypass for existing US 17 north of the schools. As discussed previously, an additional interchange is now proposed north of the Topsail Schools complex. The proposed interchange north of the schools will provide additional access to existing US 17.

As stated in DEIS Section 4.1.1, it is anticipated through traffic along existing US 17 through Hampstead will be transferred to the US 17 Hampstead Bypass. It is anticipated through traffic will continue to use the proposed bypass, even with the addition of the interchange north of the Topsail Schools complex. However, the additional access provided by the interchange will reduce travel time for those using existing US 17 in front of the schools.

Some local traffic patterns will change. Traffic volumes along existing US 17 south of the proposed interchange near Grandview Drive are expected to remain high. However, businesses that rely on drive-by traffic would likely see a reduction in those customers. For local traffic remaining on existing US 17, the resulting reduced traffic delays and proposed interchange north of the schools should improve accessibility to businesses. Development patterns are not expected to be affected by the additional access. Public hearing comments strongly indicated a preference for this improved accessibility.

5.2.2 Community Facilities and Services

Topsail High School, Topsail Middle School, and Topsail Elementary School share a campus off of US 17 near the northern end of the proposed project. A ramp for the interchange added north of the schools complex will cross a portion of the school property behind the athletic fields. The previous project design and the current design as described in this Supplemental DEIS will displace the wastewater treatment package plant used by Topsail High School. Pender County leases the wastewater treatment facility property to the Board of Education for operation of Topsail High School. Pender County plans to expand sewer services in the area of the school; however, funding availability makes the timing of improvements uncertain. NCDOT will coordinate with the Pender County School System regarding impacts to the wastewater treatment facility resulting from the proposed project.

Traffic in front of the schools will be slightly higher with the addition of an interchange north of the schools than it would have been with no access to the bypass north of the schools. However, as discussed in Section 4.3, existing US 17 in the vicinity of the

school will operate acceptably with the two interchanges proposed at the northern end of the project (Option 6TR).

A Pender County recycling center and water tower are located along US 17 adjacent to the Topsail Schools. The interchange added north of the Topsail Schools complex with Option 6TR uses reduced design criteria and avoids the water tower. However, the recycling center will be impacted. The previous project design did not affect the recycling center.

The proposed widening of existing US 17 associated with US 17 Hampstead Bypass Alternative E-H (Option 6TR) will result in the loss of a small amount of frontage along existing US 17 at Sea Lawn Cemetery, which is located on the east side of US 17 south of Transfer Station Road. Impacts to graves are not anticipated. Potential service roads will not cause impacts to cemetery properties. The proposed project has been modified to provide access to Topsail Baptist Church.

5.2.3 Relocation of Homes and Businesses

Relocation reports for the proposed project will be updated for the FEIS. Table 7 presents a summary comparison of the residential and business relocations presented in the July 2011 DEIS versus the updated impacts resulting from changes to the design as presented in this Supplemental DEIS.

Table 7. Residential and Business Relocations

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Residential Relocations	61	53	0	53
Business Relocations	84	39	0	39
Non-Profit Relocations	Included in businesses	4	0	4

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

5.2.4 Environmental Justice

Title VI of the Civil Rights Act of 1964, protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. Executive Order

12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" provides that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations. Special populations may include the elderly, children, the disabled, low-income areas, American Indians and other minority groups.

As noted above, relocation reports for the proposed project will be updated for the FEIS. The relocation reports prepared for the project will provide an estimate of minority relocations and an estimate of the income level of households that would be displaced as a result of the proposed project.

Section 4.1.4 of the DEIS concluded the proposed project is not expected to have a disproportionate impact on low-income or minority populations. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding Environmental Justice presented in the DEIS.

5.2.5 Economic Effects

It is anticipated the proposed additional interchange will have a positive economic effect when compared to the project design presented in the DEIS. The additional access north of the schools will result in slightly more traffic along the portion of existing US 17 between Grandview Drive and Leeward Lane, which should be positive to businesses along this section of existing US 17.

Travel time savings are expected for travelers from the north wishing to access the Topsail schools or businesses along existing US 17 between Grandview Drive and Leeward Lane with the additional interchange. Residents living in the area wishing to travel north on US 17 should also experience travel time savings with the additional interchange.

5.3 Land Use and Transportation Planning

5.3.1 Land Use Plans

Two proposed mixed use developments are in various stages of planning in Pender County in the vicinity of the proposed interchange north of the Topsail Schools complex: Bayberry Farms and Hawksbill Cove.

Bayberry Farms is a proposed mixed-use development. Future plans include 461 single- and multi-family residential units and retail space. The development is adjacent to Topsail High School and borders Holly Shelter Game Land. The plan includes access points from Jenkins Road and existing US 17. The proposed interchange north of the Topsail Schools complex would be located on property included in Bayberry Farms development plans, including access points from existing US 17. A potential service

road connection to the proposed development north of the bypass is under study. The Bayberry Farms proposed mixed-use development master plan and Phase I approval from the Pender County Planning Board has expired.

Hawksbill Cove is a proposed 376-acre development located along Country Club Road that would extend from the Intracoastal Waterway to existing US 17. The proposed mixed-use development includes 710 single-family residences, 395 multi-family units, and commercial, office and retail space. The Hawksbill Cove development master plan and Phase I approval from the Pender County Planning Board is valid through October 2, 2014. Access to Hawksbill Cove would be from existing US 17 via Country Club Road and Leeward Lane. The proposed interchange north of the Topsail Schools complex would improve access to the proposed development.

The proposed interchange north of the Topsail Schools complex would also improve access to a proposed commercial development off of existing US 17 near Ravenswood Road (Pender County approval valid through December 7, 2013).

The proposed project remains compatible with New Hanover County and Pender County land use plans.

5.3.2 Transportation Plans

Project U-4751 is included in the 2012-2018 NCDOT State Transportation Improvement Program (STIP) as an extension of Military Cutoff Road on new location from its current terminus at US 17 Business (Market Street) in Wilmington north to the US 17 Wilmington Bypass (John Jay Burney Jr. Freeway). Project R-3300 is included in the 2012-2018 STIP as a US 17 bypass of Hampstead.

The proposed project remains compatible with New Hanover County and Pender County transportation plans.

5.4 Impacts to the Physical Environment

5.4.1 Traffic Noise Impacts

Section 4.3.1 of the DEIS reviewed the anticipated noise impacts of the proposed project. Two hundred fifty-seven homes, businesses, churches and schools are expected to experience traffic noise impacts with Alternative M1+E-H.

Nine noise barriers are expected to meet feasibility and reasonableness criteria based on NCDOT's Traffic Noise Abatement Policy. During final design, impacted noise receptors will be evaluated in the Design Noise Study and recommended noise barrier locations will be reviewed. The final decision on the installation of abatement measures will be made upon completion of the project design and the public involvement process.

In accordance with NCDOT Traffic Noise Abatement Policy, the Federal/State governments are not responsible for providing noise abatement measures for new developments where building permits are issued within the noise impact area of a proposed highway after the Date of Public Knowledge. The Date of Public Knowledge for the proposed project will be the approval date of the Record of Decision. For development occurring after this date, local governing bodies are responsible for ensuring that noise compatible designs are utilized along the proposed facility.

5.4.2 Air Quality

Section 4.3.2 of the DEIS reviewed the anticipated air quality impacts of the proposed project. The DEIS also included a basic analysis of the likely mobile source air toxics (MSAT) emission impacts of the proposed project. The project is located in New Hanover and Pender counties, which have been determined to comply with the National Ambient Air Quality Standards (NAAQS).

The proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding air quality presented in the DEIS.

Section 176(c) of the Clean Air Act General Conformity Rule Review

The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined the activities proposed under this permit will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

5.4.3 Farmland Impacts

Section 4.3.3 of the DEIS indicates Alternative M1+E-H will impact approximately 67 acres of prime farmland in Pender County. These impacts have been coordinated with the Natural Resources Conservation Service. Farmland impacts will be updated in the FEIS and coordinated with the Natural Resources Conservation Service. It is anticipated additional impacts to prime farmland will result from the proposed improvements associated with Option 6TR and potential service road locations.

Pender County has adopted a Voluntary Agricultural District (VAD) ordinance. However, no properties have received the VAD designation. Pender County plans to accept applications from property owners who would like their land designated a VAD in the near future (Pender County, personal communication).

5.4.4 Utility Impacts

Proposed project improvements described in this Supplemental DEIS will result in additional relocation, adjustment or modification of gas, water, electric, sewer, telephone and fiber optic cable lines. The relocation of power poles may also be required. Updated utility relocation and construction costs for Alternative M1+E-H will be included in the FEIS.

Executive Orders 13212 and 13302 require federal agencies to take actions to expedite projects which will increase the production, transmission, or conservation of energy, or which strengthen pipeline safety. The subject project is not energy-related; therefore, Executive Orders 13212 and 13302 do not apply.

5.4.5 Hazardous Materials Impacts

Section 4.3.5 of the DEIS notes five potential hazardous material sites could be impacted by the detailed study alternatives. As a result of design changes prior to the selection of NCDOT's Preferred Alternative, Kelly's Automotive would no longer be potentially impacted, reducing the number of potential hazardous material site impacts to four (see Table 2).

However, as shown in Table 5 and discussed below, proposed changes to the project as documented in this Supplemental DEIS may impact an additional property with a possible underground storage tank (UST). The property is located along US 17 in the vicinity of the proposed US 17 Hampstead Bypass interchange south of Grandview Drive. The proposed third southbound lane on the US 17 Hampstead Bypass carries traffic exiting from the bypass to existing US 17 in this area.

The site is currently home to Jebby's on 17, located at 15831 US 17 in Hampstead. This facility is operated as a restaurant and bar. Property layout and signage suggest it may have been a gas station at one time. This property does not appear in the UST Section registry and no monitoring wells or other UST evidence was noted.

A site assessment to identify the nature and extent of any contamination will be performed on this site prior to right-of-way acquisition. The anticipated impacts severity of this potentially contaminated site on Alternative M1+E-H is low and little to no impacts to cost or schedule are anticipated.

5.4.6 Mineral Resources

Proposed changes to the project as documented in this Supplemental DEIS will have no effect on mineral resources.

5.4.7 Floodplain/Floodway Impacts

Updated floodplain mapping from the North Carolina Flood Maps Data Service became available since the release of the July 2011 DEIS. The new data shows an increase in reported floodplain impacts for Alternative M1+E-H from 11.73 acres to 28.69 acres (see Table 8 below), an increase of 16.96 acres. However, the design changes to the proposed project as described in this Supplemental DEIS account for 1.2 acres of the total impacted area, as shown in Section 4.5, Table 5. No new major hydraulic crossings are proposed. As noted in DEIS Section 3.3.7, there are no Federal Emergency Management Agency (FEMA) buyout properties within the study area.

In accordance with Executive Order 11988, the Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement with FMP (dated April 22, 2013), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

This project involves construction activities on or adjacent to FEMA-regulated streams. Therefore, NCDOT Division 3 shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying the drainage structure(s) and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Table 8. Floodplain/Floodway Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
100 Year Floodplain and Floodway Impacts (acres)	11.73	28.69	4.39	33.08

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date. New GIS floodplain data was released after the July 2011 DEIS. Floodplain impacts for current preferred design and service roads were derived from most recent NC Floodplain data. Impacts presented in the DEIS were based on the old floodplain data.

5.4.8 Protected Lands

5.4.8.1 Wild and Scenic Rivers

No Wild and Scenic Rivers are located in the study area.

5.4.8.2 State/National Forests

No state or national forests are located in the study area.

5.4.8.3 Gamelands and Preservation Areas

Section 3.3.8.3 of the DEIS describes the Significant Natural Heritage Areas (SNHA) and managed preservation areas in the project study area and Section 4.3.8.3 of the DEIS documents the anticipated impacts to these areas. Figures 2A-2H show the SNHA and managed preservation areas in the vicinity of the Preferred Alternative corridor, Alternative M1+E-H. Table 9 presents a summary comparison of the impacts to SNHA and managed preservation areas as presented in the July 2011 DEIS versus the updated impacts resulting from changes to the design as presented in this Supplemental DEIS.

Table 9. Natural Heritage Program SNHA, Managed Areas and Wetland Mitigation Site Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Natural Heritage Program SNHA, Managed Areas, and Wetland Mitigation Sites (acres)	4.43	4.41	0.00	4.41

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

5.5 Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), requires federal agencies to take into account the effects of their undertaking on historic properties (including archaeological sites) and afford the Advisory Council on Historic Preservation an opportunity to comment on the effects of the undertaking. Since the proposed project does not use funds from the Federal Highway Administration, but requires a federal permit from the US Army Corps of Engineers, the USACE will serve as the lead federal agency with respect to compliance

with Section 106. The proposed project is not subject to Section 4(f) of the US DOT Act of 1966.

5.5.1 Historic Architectural Resources

As noted in Section 4.4.1 of the DEIS, the proposed project will affect one property eligible for listing on the National Register of Historic Places within the area of potential effects (APE). The Preferred Alternative will have an Adverse Effect on Mount Ararat AME Church. The State Historic Preservation Office (HPO) concurred with effect determinations at a meeting held on March 8, 2011.

Since the July 2011 DEIS, avoidance and minimization measures have been incorporated into the design at Mount Ararat AME Church. A southbound free flow ramp onto Military Cutoff Road Extension was changed from a full exit lane to an angular exit. In addition, the storage length for the right turn lane from Market Street onto Ogden Park Drive was reduced to match existing conditions. Right-of-way impacts to the proposed Mount Ararat AME Church historic boundary were reduced from 0.58 acre to 0.05 acre. The State Historic Preservation Office reviewed the avoidance and minimization measures on December 13, 2011.

Proposed changes to the project as documented in this Supplemental DEIS will not affect any properties listed on or eligible for the National Register of Historic Places.

Prior to the final environmental document for the project, the USACE will notify the Advisory Council on Historic Preservation of the project's adverse effect on the National Register-eligible Mount Ararat AME Church. A Memorandum of Agreement (MOA) will be prepared between the USACE, the State Historic Preservation Office, and NCDOT outlining mitigation measures for the adverse effect.

5.5.2 Archaeological Resources

An archaeological survey of the APE was conducted between June 11 and July 5, 2013. The survey identified nine archaeological sites, including three cemeteries, within the APE. Preliminary analysis suggests one of the sites, 31PD344**, will be recommended eligible for the National Register of Historic Places.

A management summary describing the results of the survey was submitted to the HPO. The HPO provided comments on the management summary in a letter dated September 3, 2013 (see Appendix B). The entire archaeological survey report will be submitted to HPO for their review after it is completed. If the HPO concurs the recommended site is eligible for the National Register and the site cannot be avoided, then a MOA will be prepared between the USACE, the HPO, and NCDOT outlining the mitigation measures for the adverse effect to the site.

5.5.3 Tribal Lands

There are no American Indian tribal lands in the project study area. In accordance with Executive Order 13175, it has been determined that the project will have no substantial direct effect on any Indian tribes.

5.6 Impacts to the Natural Environment

5.6.1 Soils/Topographical/Geological Impacts

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding Soils/Topographical/Geological impacts presented in Section 4.5.1 of the DEIS.

5.6.2 Biotic Community and Wildlife Impacts

Biotic resources in the study area include both terrestrial and aquatic communities. Section 3.5.2 of the DEIS describes vegetation and wildlife in the study area.

5.6.2.1 Terrestrial Communities and Wildlife Impacts

5.6.2.1.1 Terrestrial Community Impacts

As noted in Section 4.5.2.1.1 of the DEIS, impacts to terrestrial communities resulting from land clearing are unavoidable. Project construction activities in or near terrestrial resources have the potential to impact the biological function of these resources. Table 10 shows the anticipated impacts of the proposed project on terrestrial communities.

Table 10. Terrestrial Community Impacts

Terrestrial Community Impacts (acres)	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Maintained/Disturbed	310.20	331.24	17.50	348.74
Mesic Pine Flatwoods	235.86	242.60	14.77	257.37
Wet Pine Flatwoods	69.77	73.22	7.90	81.12
Pond Pine Woodland	83.63	84.58	1.17	85.75
Pocosin	51.63	74.77	1.03	75.80
Xeric Sandhill Scrub	49.59	54.32	1.83	56.15
Coastal Plain Bottomland Hardwood - Blackwater Subtype	29.48	28.58	1.63	30.21
Nonriverine Wet Hardwood Forest	0.06	0.07	1.96	2.03
Pine Savanna	20.13	14.49	2.13	16.62
Cutover	29.10	29.77	6.30	36.07
Coastal Plain Small Stream Swamp - Blackwater Subtype	19.48	19.32	0.00	19.32
Cypress/Gum Swamp - Blackwater Subtype	2.49	2.58	0.00	2.58
Nonriverine Swamp Forest	1.63	1.83	0.00	1.83
Small Depression Pocosin	0.24	0.24	0.00	0.24
Small Depression Pond	1.49	1.52	0.00	1.52
TOTAL	904.78	959.13	56.22	1,015.35

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

5.6.2.1.2 Terrestrial Wildlife Impacts

As noted in Section 4.5.2.1.2 of the DEIS, fragmentation and loss of forested habitat may impact wildlife in the area by reducing potential nesting and foraging areas, as well as displacing animal populations. Forested areas provide connectivity between populations, allowing for gene flow, as well as a means of safe travel from one foraging area to another. Table 11 shows the anticipated impacts of the proposed project on forests in the study area.

Table 11. Forest Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Forest (acres)	512.12[2]	521.59	31.39	552.98

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.
[2]The DEIS included a typographical error and incorrectly reported forest impacts for M1+E-H at 518 acres.

5.6.2.2 Aquatic Communities and Wildlife Impacts

Section 4.5.2.2 of the DEIS describes impacts usually associated with in-stream construction on aquatic organisms. A summary of stream impacts is presented in Section 5.6.3.2.1 of this Supplemental DEIS and a summary of updated wetland impacts is presented in Section 5.6.3.2.3.

Appropriate measures will be taken to avoid spillage of construction materials and control runoff. Such measures will include an erosion and sedimentation control plan, provisions for disposal and handling of waste materials and storage, stormwater management measures, and appropriate road maintenance measures. NCDOT's *Best Management Practices for Protection of Surface Waters* (BMP-PSW) and sedimentation control guidelines will be enforced during the construction stages of the project. Long-term impacts to water resources may include permanent changes to the stream banks and temperature increases caused by the removal of stream-side vegetation.

5.6.3 Water Resources Impacts

Descriptions of water resources identified in the study area are included in Section 3.5.3 of the DEIS. The DEIS presents water resources impacts of the detailed study alternatives in Section 4.5.3. The proposed project will impact surface waters, wetlands and ponds, as described in the sections below. Construction activities associated with the project will strictly follow NCDOT's *Best Management Practices for Construction and Maintenance Activities* (BMP-CMA) and *Protection of Surface Waters* (BMP-PSW). Sedimentation control guidelines will be strictly enforced during the construction stages of the project.

5.6.3.1 Groundwater Impacts

Impacts to groundwater aquifers are not anticipated as a result of the proposed project.

5.6.3.1.1 Wells

Section 4.5.3.1.1 of the DEIS notes Military Cutoff Road Extension Alternative M1 would cross two existing well sites operated by the CFPUA. In response to agency comments on the DEIS, additional studies on the potential impacts of the proposed project on groundwater water supply resources and CFPUA infrastructure were conducted. The studies were documented in a February 2012 Evaluation of Impacts to Public Water Supply Groundwater Wells and a May 2012 Memorandum serving as an addendum to the February 8, 2012 Evaluation, appended by reference.

The North Carolina Department of Environment and Natural Resources (NCDENR) Public Water Supply Section recommended NCDOT coordinate with local emergency personnel to discuss potential hazardous material spills in the wellhead protection area established by CFPUA. NCDOT met with local emergency response organization representatives on June 5, 2013. Additional protection measures for the wellhead protection area were discussed at the meeting. Measures requiring NCDOT participation are identified in the project commitments.

The design of Military Cutoff Road Extension Alternative M1 was modified following completion of the DEIS to maintain a minimum 100-foot buffer from well heads. The proposed project is not expected to result in impacts to the Cape Fear Public Utility Authority's groundwater water supply wells. Impacts to the availability of the water supply are not anticipated as a result of the proposed project. The project is not expected to decrease the capacity of the existing and planned water supply infrastructure or the source aquifers.

5.6.3.2 Surface Water Impacts

5.6.3.2.1 Stream Impacts

Streams within the Preferred Alternative corridor are shown in Figures 2A-2H. Table 12 compares total stream impacts presented in the DEIS for Alternative M1+E-H and impacts reflecting the inclusion of the additional northern interchange for US 17 Hampstead Bypass (Option 6TR), and potential service roads.

The interchange added north of the Topsail Schools complex with Option 6TR to maintain access along existing US 17 uses reduced design criteria to minimize impacts to RCW habitat and the Topsail Schools complex, and avoid a Pender County water tower. The interchange is anticipated to impact approximately 680 linear feet of streams.

Table 12. Total Stream Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Delineated Stream Impacts (linear feet)	24,531	22,379	1,343	23,722

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

Section 3.5.3.2.1 of the DEIS discusses the streams in the study area that are designated High Quality Water (HQW) and Outstanding Resource Water (ORW) by the North Carolina Division of Water Resources (NCDWR). HQW/ORW watershed areas are shown in Figures 2A-2H.

Table 13 compares the impacts to HQW watersheds as presented in the DEIS for Alternative M1+E-H to the impacts for the Preferred Alternative and potential service roads. As shown in the table, impacts to HQW watersheds increase with the Preferred Alternative. As stated in Section 4.2 of this Supplemental DEIS, due to their close proximity, a third lane is proposed in each direction between the two northernmost interchanges on US 17 Hampstead Bypass under Option 6TR. The additional lane serves as an auxiliary lane to allow for acceleration, deceleration and weaving. The third lane extends in each direction along the connection between the interchange west of Grandview Drive and existing US 17. As shown on Figure 2G, this area is located within a HQW watershed.

Table 13. High Quality Waters Watershed Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
High Quality Waters Watershed (HQW, ORW, WS Protected or Critical Areas) (acres)	9.60	20.09	0.63	20.72

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

5.6.3.2.2 Surface Water Impacts

Section 3.5.3.2.2 of the DEIS presents information on ponds in the project study area. Impacts to ponds are presented in Section 4.5.3.2.2 of the DEIS. Ponds within the Preferred Alternative corridor are shown in Figures 2A-2H. Table 14 shows total surface water impacts resulting from the additional northern interchange for US 17 Hampstead Bypass (Option 6TR), and potential service roads. Impacts to tributary waters determined to be jurisdictional based on the presence of an ordinary high water mark (OHWM) were included under stream impacts in the DEIS.

Table 14. Total Surface Water Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Ponds with a connection to tributary waters (acres)	3.80	3.61	0.00	3.61
Ponds with no connection to tributary waters (acres)		1.42	0.00	1.42
Tributary waters determined to be jurisdictional based on the presence of an OHWM (square feet/acres)[1]	Included in stream impacts in DEIS[2]	18,695/0.43	546.76/ 0.01	19,241.76/ 0.44

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.
[2]Tributary waters determined to be jurisdictional based on the presence of an ordinary high water mark (OHWM). These waters are classified as 'Waters of the US' (impacts calculated in sq. ft.) and will not require compensatory mitigation.

5.6.3.2.3 Wetland Impacts

A discussion of jurisdictional wetlands in the project study area is included in Section 3.5.3.2.3 of the DEIS. Impacts to wetlands are presented in Section 4.5.3.2.3 of the DEIS. Wetlands within the Preferred Alternative corridor are shown in Figures 2A-2H in Appendix A. Table 15 compares total wetland impacts of Alternative M1+E-H from the DEIS and impacts reflecting the inclusion of the additional northern interchange for US 17 Hampstead Bypass (Option 6TR), and potential service roads.

Table 5 in Section 4.5 shows the design changes associated with Option 6TR increased wetland impacts for Alternative M1+E-H by 17.89 acres. However, as shown below in Table 15, when other avoidance and minimization measures incorporated into the

Preferred Alternative are considered, the current wetland impacts are only 2.10 acres over the impacts for Alternative M1+E-H from the DEIS, before inclusion of the potential service road wetland impacts.

Table 15. Total Wetland Impacts

	M1+E-H from DEIS	M1+E-H Option 6TR (Preferred)[1]	Service Roads	M1+E-H Option 6TR & Service Roads Total
Delineated Wetland Impacts (acres)	246.05	248.15	16.89	265.04

[1]Includes all avoidance and minimization measures incorporated into the proposed project to date.

5.6.4 Jurisdictional Issues

5.6.4.1 Waters of the United States

Section 404 of the Clean Water Act requires regulation of discharges into "Waters of the United States." The US Environmental Protection Agency (USEPA) is the principal administrative agency of the Clean Water Act; however, the USACE has the responsibility for implementation, permitting, and enforcement of the provisions of the Act. The USACE regulatory program is defined in 33 CFR 320-330.

Surface waters (lakes, rivers, and streams) and wetlands are subject to jurisdictional consideration under the Section 404 program. Any action that proposes to place fill into these areas falls under the jurisdiction of the USACE under Section 404 of the Clean Water Act (33 U.S.C. 1344).

Section 401 of the Clean Water Act grants authority to individual states for regulation of discharges into "Waters of the United States." Under North Carolina General Statutes, 113A "Pollution Control and Environment" and codified in NCAC 15A, the NCDWR has the responsibility for implementation, permitting, and enforcement of the provisions of the Act.

5.6.4.1.1 Avoidance and Minimization of Impacts

During the development of the detailed study alternatives, efforts were made to avoid and minimize impacts to wetlands and streams wherever practicable. Section 4.5.4.1.1 of the DEIS discusses avoidance and minimization of impacts. Additional avoidance and minimization measures were incorporated into the project as documented in the NEPA/

Section 404 concurrence forms included in Appendix C. Avoidance and minimization measures considered for this project will also be discussed in the FEIS.

5.6.4.1.2 Compensatory Mitigation of Impacts

As noted in Section 4.5.4.1.2 of the DEIS, the purpose of compensatory mitigation is to replace the lost functions and values from a project's impacts to Waters of the United States, including wetlands. NCDOT is investigating potential on-site stream and wetland mitigation opportunities for the Preferred Alternative. On-site mitigation will be used as much as possible. Offsite mitigation needed to satisfy the federal Clean Water Act requirements for this project will be provided by the NCDENR Ecosystem Enhancement Program in accordance with the "North Carolina Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument", dated July 28, 2010.

5.6.4.2 Buffer Impacts

No North Carolina River Basin Buffer Rules apply to project streams.

5.6.4.3 Protected Species Impacts

Section 3.5.4.3 of the DEIS presents the federally-protected species listed by the US Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA) of 1973 for New Hanover and Pender Counties. As discussed in the DEIS, as of September 22, 2010, there were 11 species in New Hanover County and 12 species in Pender County identified as endangered (E) or threatened (T) under the ESA. Table 16 below lists these 12 species. An updated list of protected species for New Hanover and Pender Counties dated December 26, 2012 was reviewed for this Supplemental DEIS. One species, the Atlantic sturgeon, was added as an endangered species in both counties. There were no other changes in the list of protected species for either county. The Atlantic sturgeon is included in Table 16.

Section 3.5.4.3 of the DEIS also provided a brief description of each of the protected species in New Hanover and Pender Counties, as well as a statement as to whether or not suitable habitat exists in the study area. This same information is provided for the new protected species, the Atlantic sturgeon, below.

Atlantic sturgeon

Atlantic sturgeon are anadromous; adults spawn in freshwater in the spring and early summer and migrate into estuarine and marine waters where they spend most of their lives. In some southern rivers a fall spawning migration may also occur. They spawn in moderately flowing water in deep parts of large rivers. It is likely that cold, clean water is important for proper larval development. Once larvae begin migrating downstream they use benthic structure (especially gravel matrices) as refuges. Juveniles usually reside in estuarine waters for months to years. Subadults and adults

live in coastal waters and estuaries when not spawning, generally in shallow (10-50 meter depth) nearshore areas dominated by gravel and sand substrates. Long distance migrations away from spawning rivers are common.

Suitable habitat for Atlantic sturgeon does not exist in the study area.

Table 16. Federally Protected Species Listed for New Hanover & Pender Counties

Scientific Name	Common Name	Federal Status	Habitat Present	County	Biological Conclusion
Alligator mississippiensis	American alligator	T(S/A)	Yes	New Hanover Pender	Not Required
Chelonia mydas	Green sea turtle	T	No	New Hanover Pender	No Effect
Caretta caretta	Loggerhead sea turtle	T	No	New Hanover Pender	No Effect
Charadrius melodus	Piping plover	T	No	New Hanover Pender	No Effect
Picoides borealis	Red-cockaded woodpecker	E	Yes	New Hanover Pender	May Affect, Likely to Adversely Affect
Acipenser brevirostrum	Shortnose sturgeon	E	No	New Hanover Pender	No Effect
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	No	New Hanover Pender	No Effect
Trichechus manatus	West Indian manatee	E	No	New Hanover Pender	No Effect
Schwalbea americana	American chaffseed[1]	E	Yes[1]	Pender	No Effect
Thalictrum cooleyi	Cooley's meadowrue	E	Yes	New Hanover Pender	No Effect
Carex lutea	Golden sedge[2]	E	Yes[2]	New Hanover[2] Pender	No Effect
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Yes	New Hanover Pender	May Affect, Likely to Adversely Affect
Amaranthus pumilus	Seabeach amaranth	T	No	New Hanover Pender	No Effect

E – Endangered T – Threatened T(S/A) - Threatened due to Similarity of Appearance
[1]Historic record (the species was last observed in the county more than 50 years ago).
[2]Golden sedge status is "Probable/Potential" for New Hanover County. This species is considered likely to occur in New Hanover County based on presence of Cooley's meadowrue.

Section 4.5.4.3 of the DEIS discussed the biological conclusions for the project's likely effect on each protected species in New Hanover and Pender Counties with the detailed study alternatives based on survey results in the study area. The biological conclusions for each protected species for the Preferred Alternative (Alternative M1+E-H, Option 6TR) are summarized in Table 16 above. The biological conclusions for the 12 federally-protected species listed for Alternative M1+E-H in the DEIS are unchanged.

Pedestrian surveys were conducted for listed plant species on May 29-30, 2012. The biological conclusions listed in Table 16 reflect the results of that updated survey.

Red-cockaded woodpecker

Four red-cocked woodpecker (RCW) clusters (cavity trees used by a single group of birds) exist near the northern portion of the proposed Hampstead Bypass. Three active RCW clusters exist within the boundary of Holly Shelter Game Land and a fourth active cluster exists on private land. The clusters within the gameland are part of the Mid-Atlantic Coastal Plain Recovery Unit. The RCWs on the gameland are of particular importance because they are part of the primary core recovery population. The recovery goals are 350 potential breeding groups for this population and current levels are below that number. Holly Shelter Game Land is one of three properties contributing to the primary core recovery population.

The foraging areas (partitions) used by the groups on Holly Shelter Game Land extend onto private land outside the gameland. Two of the partitions extend across existing US 17. Efforts to avoid and minimize impacts to this foraging habitat have been ongoing during development of the proposed Hampstead Bypass. Several RCW foraging habitat analyses have been conducted for the project. The foraging habitat analysis was last updated in July and December 2012. Several design changes have occurred in the project, as well, in an effort to reduce impacts.

As discussed in Section 4.1 of this document, the original proposed northern US 17 Hampstead Bypass interchange (E-H ORIG) was located north of the Topsail Schools complex, near the project terminus between Leeward Lane and Sloop Point Loop Road. However, this design was changed after a foraging habitat analysis conducted in 2009 showed the interchange was located within RCW foraging habitat. The interchange would have resulted in "takes" on two RCW clusters on Holly Shelter Game Land. The Endangered Species Act defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The northern interchange was moved from its location north of the Topsail Schools complex to south of the schools to minimize impacts to RCW foraging habitat. This revised design reduced the number of takes from two to one. The cluster which would still be taken with the revised design does not currently have enough foraging habitat, so any tree removals would be considered a take. This revised design was presented in the DEIS and at the 2011 corridor public hearings.

In addition to moving the northern interchange, a commitment was made in the DEIS that clearing along existing US 17 would not exceed a width of 200 feet in areas where there is adjacent RCW foraging habitat in order to maintain connectivity between foraging habitat partitions.

The additional interchange now proposed north of the Topsail Schools complex will not result in any additional takes of RCW clusters. The interchange uses reduced design criteria to minimize impacts to RCW foraging habitat and the Topsail Schools complex, and to avoid a Pender County water tower. While the interchange avoids foraging habitat, it will impact approximately 681 linear feet of streams, approximately 18 acres of wetlands, and approximately 0.73 acre of ponds. The interchange north of the schools cannot be shifted any further north out of the wetland and stream complex. Such a shift would result in impacts and a take on an additional cluster. There is no design change that could move the interchange east because it would be located in the RCW foraging habitat.

The six lanes now proposed for the northern section of the proposed bypass, including along the portion of existing US 17 between the bypass tie-in and Sloop Point Loop Road, will not result in additional takes of RCW clusters, even though proposed clearing will exceed 200 feet in some areas.

As discussed previously, the DEIS included a commitment to limit clearing to 200 feet within the foraging partitions along existing US 17. Based on the results of the earlier foraging habitat analyses, any clearing greater than 200 feet would have resulted in the take of an additional cluster. Since completion of the DEIS, new proposed regional RCW Standard for Managed Stability (SMS) foraging habitat guidelines have been developed and the USFWS has agreed to their use for this project. The December 2012 foraging habitat analysis used the proposed regional SMS guidelines and found that clearing greater than 200 feet along existing US 17 within the foraging partitions would not result in the take of an additional RCW cluster.

Consultation with the USFWS regarding the effects of the proposed project on the federally-protected RCW and rough-leaved loosestrife is required. Informal consultation for RCW has taken place between NCDOT and the USFWS since 2006. Informal consultation for rough-leaved loosestrife has taken place between NCDOT and the USFWS since 2008. The USACE will serve as the lead federal agency with respect to compliance with Section 7 of the Endangered Species Act. It is anticipated the USACE will request of the USFWS that formal consultation for RCW and rough-leaved loosestrife be initiated in accordance with Section 7 of the Endangered Species Act.

5.6.4.4 Bald Eagle and Golden Eagle Protection Act

The project is not expected to impact bald eagle.

5.6.4.5 Essential Fish Habitat Impacts

There is no designated Essential Fish Habitat present in the study area.

5.7 Indirect and Cumulative Effects

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding indirect and cumulative effects (ICE) as presented in Section 4.6 of the DEIS. An updated Indirect and Cumulative Effects Analysis, including an updated ICE Screening report and ICE Land Use Scenario Assessment, is being prepared for the project. Information from these studies will be included in the FEIS.

5.8 Construction Impacts

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding construction impacts presented in Section 4.7 of the DEIS.

5.9 Irretrievable & Irreversible Commitment of Resources

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding the irretrievable and irreversible commitment of resources presented in Section 4.8 of the DEIS.

5.10 Relationship between Long Term & Short Term Uses/Benefits

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding the relationship between long term and short term uses/benefits as presented in Section 4.9 of the DEIS.

6.0 Agency Coordination and Public Involvement

This chapter identifies the public involvement activities and environmental resource and regulatory agency coordination that have taken place since the issuance of the July 2011 Draft Environmental Impact Statement (DEIS).

6.1 Agency Coordination

This project was coordinated with the appropriate federal, state and local agencies. Comments received on the DEIS will be addressed in the Final Environmental Impact Statement (FEIS).

The USACE published a Notice of Intent for this Supplemental DEIS in the Federal Register on July 25, 2013.

6.1.1 NEPA/Section 404 Merger Process

This project has followed the NEPA/Section 404 Merger Process. The Merger Process is an interagency procedure integrating the regulatory requirements of Section 404 of the Clean Water Act into the National Environmental Policy Act and State Environmental Policy Act decision-making process. The agencies represented on the U-4751 and R-3300 NEPA/Section 404 Merger Team are:

- US Army Corps of Engineers
- US Environmental Protection Agency
- US Fish and Wildlife Service
- National Marine Fisheries Service
- NC Division of Coastal Management
- NC State Historic Preservation Office
- NC Division of Marine Fisheries
- NC Division of Water Resources
- NC Wildlife Resources Commission
- NC Department of Transportation
- Wilmington Metropolitan Planning Organization

Prior to the issuance of the DEIS, the Merger Team concurred on the purpose and need, alternatives to be studied in detail, and wetlands and streams to be bridged as noted below. Copies of the signature forms from these concurrence meetings were included in the DEIS.

As discussed in more detail below, since the issuance of the July 2011 DEIS and the October 2011 corridor public hearings, the NEPA/Section 404 Merger Team reached concurrence on NCDOT's Preferred Alternative as the LEDPA, as well as on further avoidance and minimization measures for the project. Copies of the signature forms from these concurrence meetings are included in Appendix C.

- The NEPA/Section 404 Merger Team met on December 15, 2011 to review the project status, discuss comments on the DEIS, and to identify any additional information needed prior to their concurrence on the LEDPA at Concurrence Point 3.

- NCDOT's recommended Preferred Alternative, Military Cutoff Road Extension Alternative M1 and US 17 Hampstead Bypass Alternative E-H (see Figure 1 and Figure 2A-2H), was concurred on by the NEPA/Section 404 Merger Team as the LEDPA at the Merger Team meeting on May 17, 2012. EPA conditionally concurred on Military Cutoff Road Extension Alternative M1 as the LEDPA for U-4751. EPA abstained from concurrence on US 17 Hampstead Bypass Alternative E-H as the LEDPA for R-3300. Sections 3.3 and 4.5 discuss the Merger Team's concurrence on the LEDPA in more detail.

- The NEPA/Section 404 Merger Team met on June 14, 2012 to discuss avoidance and minimization for the proposed Military Cutoff Road Extension. The Merger Team concurred on avoidance and minimization measures for Military Cutoff Road Extension on August 8, 2012. Avoidance and minimization for Military Cutoff Road Extension was discussed separately from the discussion for US 17 Hampstead Bypass (R-3300) in order to maintain the U-4751 project schedule. Additional time was needed prior to discussing avoidance and minimization measures for US 17 Hampstead Bypass so NCDOT could evaluate the northern interchange design and location in response to comments received from the public at the corridor public hearings.

- The Avoidance and Minimization meeting for US 17 Hampstead Bypass was held on February 20, 2013. The NEPA/Section 404 Merger Team concurred on Avoidance and Minimization for US 17 Hampstead Bypass on June 13, 2013, with EPA abstaining. A copy of the signed concurrence form and EPA's abstention brief for US 17 Hampstead Bypass Avoidance and Minimization is included in Appendix C.

6.1.2 Other Agency Coordination

NCDOT agreed to the following commitment regarding Cape Fear Public Utility Authority's (CFPUA) water supply wells and wellhead protection area in relation to the proposed Military Cutoff Road Extension project at the NEPA/Section 404 Merger Team Meeting in June 2012:

> "Prior to the completion of the final environmental document for the project, NCDOT will meet with the CFPUA, local fire departments and other

appropriate agencies to discuss additional protection measures for the wellhead protection area. Measures requiring NCDOT participation will be identified in the project commitments."

NCDOT conducted a meeting on June 5, 2013 at the New Hanover County Emergency Operations Center. Representatives from the following agencies participated in the meeting: NCDENR Public Water Supply Section, CFPUA, New Hanover County Department of Fire Services, New Hanover County Emergency Management/911, Wilmington Fire Regional Response Team, and NCDOT. Additional protection measures for the wellhead protection area were developed and agreed upon at the meeting. Measures requiring NCDOT participation have been added to the project commitments.

6.2 Public Involvement

6.2.1 October 17 and 18, 2011 Corridor Public Hearings

As noted in Section 3.2, corridor public hearings were held for the proposed Military Cutoff Road Extension (Project U-4751) and US 17 Hampstead Bypass (Project R-3300) on October 17, 2011 in Wilmington and October 18, 2011 in Hampstead. A total of 384 citizens registered their attendance at the meetings. Fifteen individuals provided verbal comments and 92 written comments were received.

Several of the comments were related to potential project effects on individual properties, especially along proposed Military Cutoff Road Extension. Over half of the written comments received were related to the lack of access onto existing US 17 north of the Topsail Schools complex. Virtually all of these expressed concern that no access north of the schools was proposed.

Several other written comments were related to environmental concerns. Some of these expressed concerns the proposed projects would be detrimental to the environment, while others expressed the opinion environmental concerns were affecting project design to the detriment of the community.

The public hearing comment form provided the opportunity for commenters to rank the order of their corridor preference(s) from among the five Current Detailed Study Alternatives. Several respondents stated their preferred alternative(s) within their written comments instead of numbering the alternatives on the comment form. Preference by alternative as indicated by commenters is shown below.

Alternative	1st Choice	2nd Choice	3rd Choice	4th Choice	5th Choice
M1+E-H	15		1	2	1
M2+O	15	3	4		
M1+R	11	4		1	1
M1+U	5	2	3		
M2+U	10	3		2	

NCDOT conducted a post-hearing meeting on December 1, 2011 to review and discuss all verbal and written comments received on the proposed design during the public comment period.

6.2.2 August 28, 2012 Design Public Meeting for Project U-4751

A design public meeting was held for Military Cutoff Road Extension on August 28, 2012 in Wilmington to present the proposed preliminary design within NCDOT's Preferred Alternative corridor. A total of 222 citizens registered their attendance at the meeting.

Ten individuals recorded verbal comments for the record at the public meeting and 16 people submitted written comments at the meeting or during the comment period following the meeting. In their comments, citizens expressed concerns about increased traffic noise, decreased property values, emergency vehicle access, access to businesses on Market Street, and increased traffic on local roads. Other concerns included the lack of signals at crossovers and U-turns, the lack of access to Murrayville Road from Military Cutoff Road Extension, and potential drainage issues.

NCDOT conducted a post-hearing meeting on November 5, 2012 to review and discuss all verbal and written comments received on the proposed design during the public comment period.

6.2.3 August 15, 2013 Citizens Informational Workshop

NCDOT conducted a citizens informational workshop on August 15, 2013 at Topsail High School in Hampstead. The purpose of the workshop was to present information on the US 17 Hampstead Bypass interchange located north of the Topsail Schools complex, discuss any concerns and answer questions on the proposed improvements, and receive public input. This workshop was advertised in local papers and postcards announcing the workshop were mailed to individuals on the project mailing list.

The informational workshop was conducted in an open house-style format, NCDOT representatives were available to answer questions and receive comments regarding the proposed project. There was no formal presentation. Citizens were informed a Supplemental Draft Environmental Impact Statement addressing the proposed design changes would be available for review in the fall of 2013.

One hundred eighty-three citizens registered their attendance at the workshop. Citizens had the opportunity to submit written comments and questions at the workshop or via mail and e-mail after the workshop through September 23, 2013. Twenty-seven written comments were submitted either at the workshop or during the subsequent comment period.

Many of the comments and questions from citizens at the workshop were related to project effects on individual properties and questions related to property access following construction of the bypass. A number of the initial comments made by citizens entering the workshop were in opposition to the interchange west of Grandview Drive. However, some workshop attendees seemed to be more supportive of the proposed project as presented once they had an opportunity to discuss the details of, and reasons for, the proposed design changes. Some of the more frequent verbal comments received from citizens included:

- Support for the additional northern interchange and appreciation that NCDOT listened to public concerns about access along US 17 in this area.

- Support for building the bypass as soon as possible because it is badly needed to solve traffic problems in the Hampstead area.

- Questions about the accuracy of the traffic forecasts and requests for them to be revised to reflect actual conditions in the Hampstead area.

- Questions as to whether the interchange west of Grandview Drive is needed with the additional northern interchange and the interchange at NC 210.

- Concerns that the interchange west of Grandview Drive would be disruptive to the Hampstead community.

- Support for an interchange at Hoover Road to provide alternative access to the elementary school, as well as improved access to neighborhoods in case of emergencies.

- Concerns about the impacts of the bypass on individual properties, including questions about access to properties that would be cut-off by the bypass but not directly taken.

- Concerns about the traffic impacts to neighborhoods adjacent to US 17 in the Leeward Lane and Long Leaf Drive area as a result of closing existing US 17 to the north of the Topsail Schools complex.

- Questions about why a compact interchange design was used north of the schools rather than a design more like the US 17 Business (Market Street)/US 17 Wilmington Bypass interchange.

Written comments received from citizens included:

- Support for the US 17 Hampstead Bypass, but not with the interchange west of Grandview Drive.

- Support for the northern interchange north of the Topsail Schools complex.

- Support for and opposition to an interchange at Hoover Road.

- Concerns about impacts on individual properties.

- Concerns about the accuracy of the traffic forecasts.

- Belief the interchange west of Grandview Drive is an unnecessary expense.

Citizen comments will be taken into consideration as project development continues including during final design. Appendix D includes a summary of all written comments received at the August 2013 citizens informational workshop.

6.2.4 Additional Public Involvement

A project newsletter was mailed to citizens and other stakeholders in the project study area in August 2012. The newsletter informed citizens of the selection of the Preferred Alternative and announced the August 2012 design public meeting for Military Cutoff Road Extension.

A public notice will be issued announcing the availability of the Supplemental DEIS and the locations where it can be reviewed. A post card announcing the availability of the Supplemental DEIS will be mailed to individuals on the project mailing list. In addition, the Supplemental DEIS will be posted on the project website at www.ncdot.gov /projects/US17HampsteadBypass/. Citizen and agency comments received on the Supplemental DEIS will be included in the FEIS.

After completion of the FEIS, a public notice will be issued announcing its availability and the locations where it can be reviewed. The current project schedule includes completion of the FEIS in early 2014. Citizen and agency comments received on the FEIS will be included in the State Record of Decision (SROD). The SROD is expected to be completed in the spring of 2014.

A design public meeting will be held for US 17 Hampstead Bypass after the publication of the SROD to present the proposed design within the Selected Alternative corridor prior to completion of final design plans and right-of-way acquisition. A newsletter announcing the design public meeting will be mailed to individuals on the project mailing list.

6.3 USACE Public Interest Review

The proposed project will be reviewed in accordance with 33 CFR 320-332, the Regulatory Programs of the USACE, and other pertinent laws regulations and executive orders. The decision whether to authorize this proposal will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed action on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal, will be considered. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people.

All public interest factors have been reviewed. The following public interest factors included in Sections 6.3.1 through 6.3.20 below are considered relevant to this proposal. Both cumulative and secondary impacts on the public interest were considered.

6.3.1 Conservation

As described in Section 3.2.1 of the DEIS, with the exception of properties near US 17, land use north of the Wilmington Bypass is predominantly rural in nature and includes preserved land, undeveloped forests, open fields, and wetlands. Conservation areas are addressed in Section 3.2.1.3 of the DEIS. Section 4.2.1 of the DEIS provides information on compatibility with local land use plans. Indirect and cumulative effects related to development can be found in Section 4.6 of the DEIS.

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding conservation presented in the DEIS.

6.3.2 Economics

In accordance with 33 CFR 320.4(q), Section 4.1.5 of the DEIS describes how new and/or improved access and mobility provided by the proposed project will have an overall positive economic effect. Indirect and cumulative economic effects are described in Section 4.6 of the DEIS. The proposed project is not expected to directly contribute

to National Economic Development, which is an increase in the net value of the national output of goods and services.

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding economics presented in the DEIS.

6.3.3 Aesthetics

The proposed additional interchange adjacent to Topsail High School will result in greater visual impacts to the school than the design presented for the detailed study alternatives in the DEIS. The proposed interchange will be more visible from the school than the bypass roadway would have been with the design presented in the DEIS.

6.3.4 General Environmental Concerns

General environmental concerns, including beneficial and detrimental effects have been evaluated in accordance with (33 CFR 320.4(p)). Section 4.1.4 of the DEIS evaluates Environmental Justice. Information pertaining to other environmental factors is addressed in Sections 5.3.5 through 5.3.20 of the DEIS.

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding general environmental concerns presented in the DEIS.

6.3.5 Wetlands

Wetland impacts have been evaluated in accordance with 33 CFR 320.4(b). Estimated wetland impacts for the project are 248.15 acres. Additional wetland impacts will result from incorporation of potential service roads as shown in Table 4. No anadromous fish spawning areas, shellfish growing areas, or primary nursery areas will be affected. Additionally, there is no Essential Fish Habitat or Coastal Area Management Act Areas of Environmental Concern in the project study area.

6.3.6 Historic and Cultural Resources

In accordance with 33 CFR 320.4(e), impacts to historic and cultural resources have been evaluated as a part of the project. Sections 3.4 and 4.4 of the DEIS provide information on the resources and impacts.

Proposed changes to the project as documented in this Supplemental DEIS will not affect any properties listed on or eligible for the National Register of Historic Places and are consistent with the conclusions regarding historic and cultural resources presented in the DEIS.

6.3.7 Fish and Wildlife Values

In accordance with 33 CFR 320.4(c), NCDOT has coordinated extensively with the USFWS and the NC Wildlife Resources Commission, as detailed in Section 5.1 and Appendix B of the DEIS. Fish and wildlife resources are detailed in Sections 3.5.2 and 4.5.2 of the DEIS.

NCDOT has continued to coordinate with the USFWS and the NC Wildlife Resources Commission as noted in Section 6.1.1 of this document. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding fish and wildlife values presented in the DEIS.

6.3.8 Flood Hazards

Sections 3.3.7 and 4.3.7 of the DEIS address flood hazard issues. NCDOT has coordinated with local planners to ensure the proposed project is compatible with local plans, including hazard mitigation.

Proposed changes to the project as documented in this Supplemental DEIS will not increase flood hazards and are consistent with the conclusions regarding flood hazards presented in the DEIS.

6.3.9 Floodplain Values

As stated in 33 CFR 320.4(l)(1)(i), floodplains are valuable in providing a natural moderation of floods, water quality maintenance, and groundwater recharge. NCDOT's Preferred Alternative, Alternative M1+E-H, crosses the 100-year floodplain. In accordance with Executive Order 11988, NCDOT will coordinate the project with the NC Floodplain Mapping Program.

6.3.10 Land Use

Land use information and impacts of the proposed project changes are detailed in Sections 5.2.1 and 5.3.1 of this document.

6.3.11 Navigation

The project will have no effect on navigation, and no permits from the US Coast Guard are required.

6.3.12 Shore Erosion and Accretion

The proposed project will have no effect on shore erosion or accretion, as it pertains to 33 CFR 320.4(g)(2).

6.3.13 Recreation

The proposed additional interchange at the northern end of the US 17 Hampstead Bypass was aligned to avoid impacts to sports fields at the Topsail Schools complex. Proposed changes to the project as documented in this Supplemental DEIS will have no effect on recreation.

6.3.14 Water Supply

Proposed changes to the project as documented in this Supplemental DEIS will have no effect on water supply.

6.3.15 Water Quality

The proposed project will require a Water Quality Certification from the NC Division of Water Resources (NCDWR). NCDOT has coordinated extensively with NCDWR and the US Environmental Protection Agency regarding compliance with the Clean Water Act, in accordance with 33 CFR 320.4(d). Detailed information related to water quality compliance and coordination can be found in DEIS Appendix B and Sections 3.5.4, 4.5.3, 4.5.4.1.2, 4.6.1, and 5.1.

Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding water quality presented in the DEIS. The DEIS noted impacts to two Cape Fear Public Utility Authority well sites would result from the proposed project. The project has been modified to avoid these well sites.

6.3.16 Energy Needs

As stated in Section 4.7.1.1 of the DEIS, and in accordance with 33 CFR 320.4(n), the proposed project will not increase the production, transmission, or conservation of energy. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding energy needs presented in the DEIS.

6.3.17 Safety

The proposed project is expected to reduce the potential for accidents along existing roadways, due to a reduction in traffic volumes. Both Military Cutoff Road Extension and Hampstead Bypass are proposed as median-divided facilities, reducing the likelihood of head-on collisions. Additional safety information is located in Section 2.6 of the DEIS. Proposed changes to the project as documented in this Supplemental DEIS are consistent with the conclusions regarding safety presented in the DEIS.

6.3.18 Food and Fiber Production

Section 4.3.3 of the DEIS states that the proposed project will impact approximately 67 acres of prime farmland in Pender County. These impacts have been coordinated with

the Natural Resources Conservation Service. Farmland impacts will be updated in the FEIS and coordinated with the Natural Resources Conservation Service.

6.3.19 Mineral Needs

Information related to mineral resources in the project area are located in Sections 3.3.6 and 4.3.6 of the DEIS. Proposed changes to the project as documented in this Supplemental DEIS will have no effect on mineral needs.

6.3.20 Considerations of Property Ownership

Considerations of property ownership have been made during evaluation of the proposed project. Every effort has been made to balance impacts to both the human and natural environments. There will be no impacts to public rights to navigation. Any unavoidable impacts, including to riparian rights, on individual property owners will be handled during the right-of-way acquisition phase of the project.

7.0 List of Preparers

This chapter includes a list of the principal participants in the preparation of this Supplemental Draft Environmental Impact Statement.

7.1 North Carolina Department of Transportation

Name	Qualifications	Primary Responsibilities
James McInnis, Jr. PE Project Engineer	BS in Civil Engineering with 21 years of experience in project planning and development	Project development and document review
Kim Gillespie, PE Project Planning Engineer	BCE in Civil Engineering with 24 years of experience in traffic engineering, and project planning and development	Project management and document review
Robert Hanson, PE Eastern Project Development Engineer	MCE of Civil Engineering and BS in Civil Engineering with 26 years of experience in transportation engineering	Management oversight and document review
Gary Lovering, PE Project Engineer	BS in Civil Engineering with 33 years of experience in roadway design	Preliminary Design review
Kevin Moore, PE Project Design Engineer	BS in Civil Engineering with 19 years of experience in roadway design	Preliminary Design review
Benjetta Johnson, PE Congestion Management Regional Engineer	BS in Civil Engineering with 12 years of experience in traffic engineering	Traffic Analysis Report review
Stephen Yeung, PE Congestion Management Project Design Engineer	BS in Electrical Engineering with 8 years of experience in traffic engineering	Traffic Analysis Report Review

7.2 Mulkey Engineers and Consultants

Name	Qualifications	Primary Responsibilities
Liz Kovasckitz, AICP Planning Group Manager	MS in Environmental Studies and BA in Geography with 22 years of experience in environmental and transportation planning and project development	Overall project management and development of the Supplemental DEIS
J.A. Bissett, P.E. Principal	BS in Civil Engineering with 28 years of experience in transportation planning and project development	Quality Assurance
Steven Drum, PE Roadway Design Engineer	BS in Civil Engineering with 24 years of experience in roadway design and transportation planning	Preliminary Design Quality Assurance
Paddy Jordan Roadway Designer	Associates in Civil Engineering/ Survey with 10 years of experience in roadway design	Preliminary Design
Johnny Banks Roadway Designer	Associates in Architectural Technology with 26 years of experience in roadway design	Preliminary Design
Jeff Tokarczyk, GISP GIS Analyst	BA in Geography with 12 years of experience in planning and GIS	Impacts analysis and environmental document figures
Bobby Norburn, EI Planner	BS in Civil Engineering with 20 years of experience in environmental and transportation planning and project development	Environmental document preparation
Kat Bukowy Planner	Master of Public Administration, Master of Natural Resources and BS in Environmental Science with 6 years of experience in environmental and transportation planning and GIS	Environmental document preparation
Mark Mickley Environmental Scientist	BS in Biology with 8 years of experience in natural resource investigations	Natural resource investigations Principal Investigator

7.3 RS&H Architects-Engineers-Planners, Inc.

Name	Qualifications	Primary Responsibilities
Radha Krishna Swayampakala, P.E. Transportation Engineer	MS in Civil Engineering with 10 years of experience in traffic operations and transportation planning	Traffic operations analysis
Edith G. Peters, P.E. Transportation Engineer	BS in Civil Engineering with 6 years of experience in traffic operations and transportation planning	Traffic operations analysis